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News of the Industry Begins Page 32

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AUTOMOTIVE INDUSTRIES

Volume 60
Number 1

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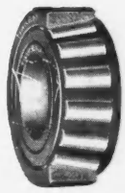
WHO and WHERE

Of the 40 Manufacturers of Passenger Cars in This Country, 35 Use Timken Bearings at the Points Indicated by Crosses



Make	Model	Front Wheels	Rear Wheels	Pinion	Steering	Differential
Auburn	All	x.	x.	x.	...	x.
Cadillac	All	x.	x.	...	x.	x.
Chandler	65 & Royal 75	x.	x.	x.	...	x.
	New Big 6 & Royal 85	x.	...	x.	...	x.
Chrysler	De Soto	x.	x.	x.	...	x.
	Plymouth	x.	x.	x.	...	x.
	65 & 75	x.	x.	x.	...	x.
	80	x.	...	...	...	x.
Cunningham	All	x.	x.	x.	...	x.
Dodge	All	x.	x.	...	...	x.
Durant	M4 and D60	x.	x.	x.	...	...
	D70 & D80	x.	x.	x.	...	x.
Elcar	6-70	x.	...	...	...	x.
	8-78, 8-82	x.	x.	...	...	x.
	8-91, 8-92	x.	x.	...	...	x.
Falcon	All	x.	x.	x.	x.	x.
Ford	All	x.	...	x.	x.	x.
Franklin	All	x.	x.	x.	x.	x.
Gardner	All	x.	x.	x.	...	x.
Graham-Paige	610	x.	x.	x.	...	x.
	614	x.	x.	...	...	x.
	619, 629, 835	x.	x.	...	x.	x.
Hudson and Essex	All	x.	x.	x.	...	x.
Hupmobile	Century 6	x.	x.	x.	x.	x.
	Century 8	x.	x.	x.	x.	x.
Jordan	All	x.	x.	x.	x.	x.
Kissel	All	x.	x.	x.	...	x.
Kleiber		x.	x.	x.	...	x.
LaSalle	All	...	...	...	...	x.
Lincoln	All	x.	x.	x.	x.	x.
Locomobile	All	x.	x.	...	...	x.
Marmon	68	x.	...	...	...	x.
	78	...	x.	...	...	x.
McFarlan	All	x.	x.	x.	...	x.
Moon	All	x.	x.	x.	...	x.
Nash	Std 6	x.	x.	x.	...	x.
———	All	x.	...	...	...	x.
Peerless	8-69	x.	x.	...	...	x.
	6-91, 6-60 and 6-80	x.	x.	x.	...	x.
Pierce-Arrow	81	x.	x.	x.	...	x.
	36	x.	x.	...	...	...
Reo	Flying Cloud	x.	x.	...	x.	x.
	Wolverine	x.	x.	...	...	x.
Roamer		x.	...	...	...	...
Stearns-Knight	All	x.	x.	x.	x.	x.
Studebaker and Erskine	All	x.	x.	x.	x.	x.
Stutz	All	x.	x.	x.	...	x.
Velie	All	x.	x.	x.	x.	x.
Willys-Overland	Whippet 4	x.	x.	x.	x.	x.
	Whippet 6	x.	x.	x.	x.	x.
	56	x.	x.	x.	x.	x.
	66-A	x.	...	...	x.	x.
	70-A	x.	...	x.	x.	x.

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The AUTOMOBILE

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Established 1902

Vol. 60 No. 1

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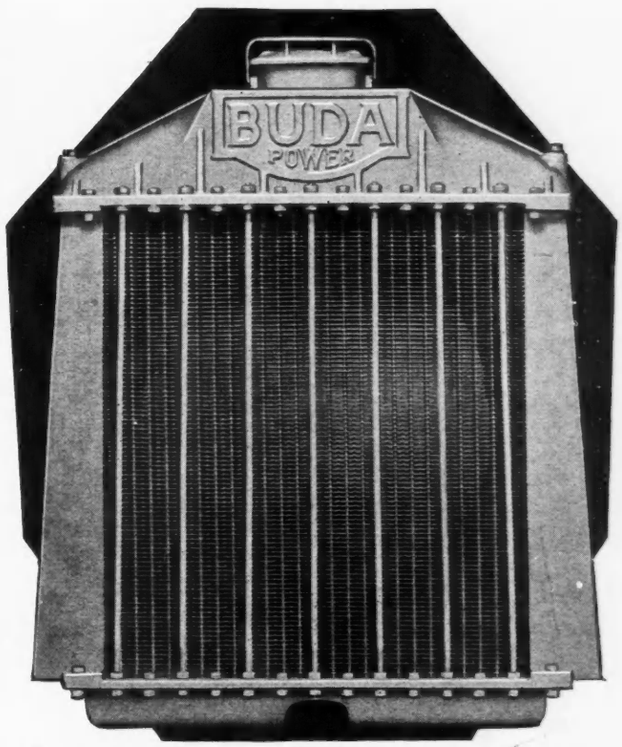

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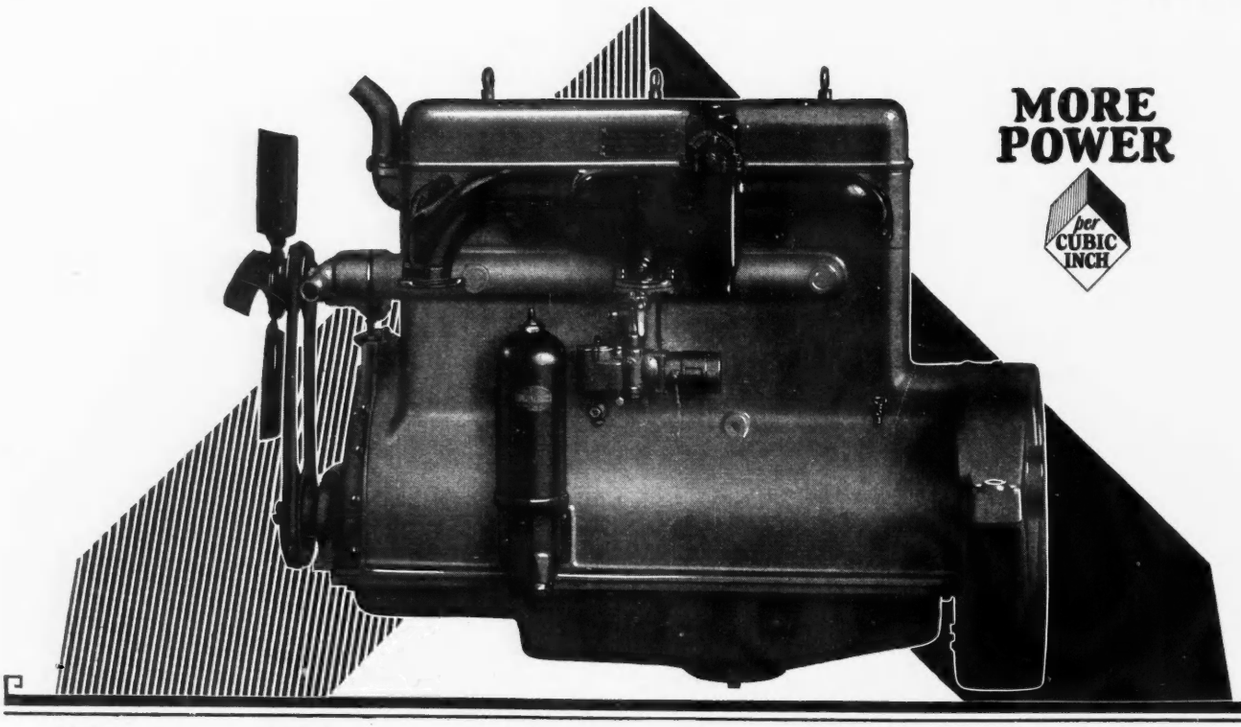

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AUTOMOTIVE INDUSTRIES

VOLUME 60 *Philadelphia, Saturday, January 5, 1929* NUMBER 1

New York Show Opens With Many New Car *Announcements*

Studebaker, Pierce-Arrow, Franklin, Graham-Paige, Stutz, Peerless and Jordan displaying new lines. Exhibit has international flavor. Lavish setting.

THE automotive industry officially touches off the 1929 selling season with the opening of the New York Automobile Show today.

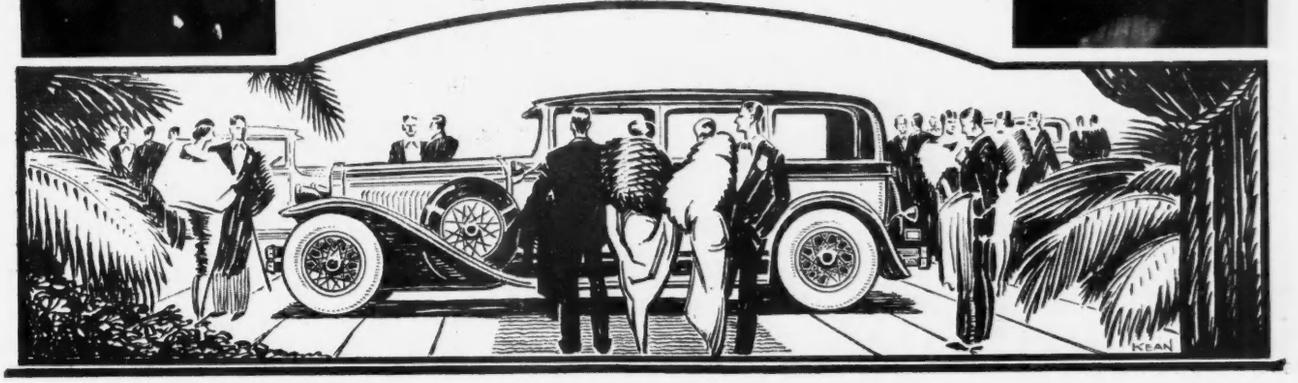
Any New York national show is an event, but this one is of more than usual interest for several reasons. First, Manager Sam Miles and the N. A. C. C. show committee, headed by Charles D. Hastings, have outdone themselves in providing a setting of extreme beauty and lavishness for the exhibits; second, the show is given a distinct international flavor by the presence of five foreign makes; and third, it signalizes the termination of the greatest business year the industry has ever known, and the beginning of another year which many confidently expect will be even better.

That portion of the public and trade which visits Grand Central Palace each year with a primary interest in brand new productions will find much to reward them — a Studebaker Commander eight, two Pierce-Arrow eights, two larger Franklins, the Blackhawk built by Stutz, and a new Graham-Paige eight. These cars are all described on the following pages. Jordan and Peerless also announced new jobs as the show opened and these will be described in next week's issue.

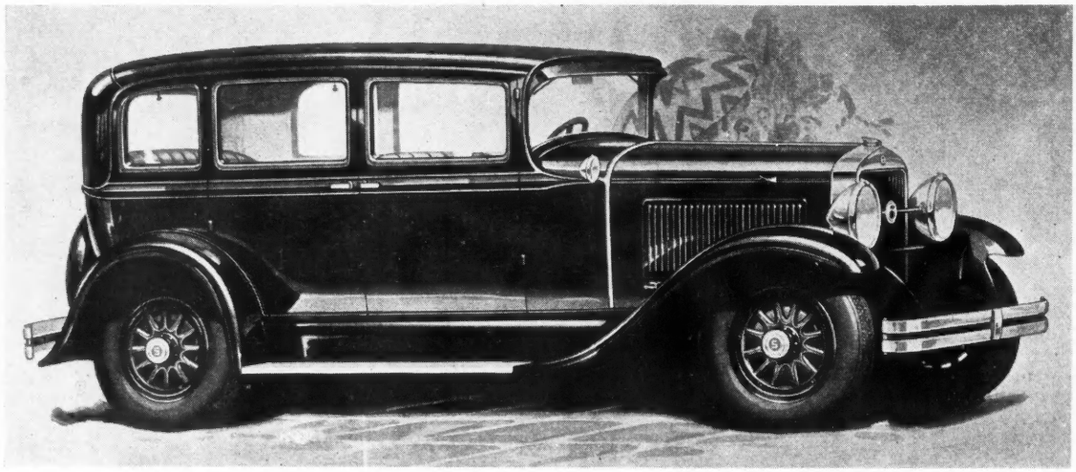
There will be the usual number of special automotive dealer meetings and dinners during show week. Association activities will include the annual show dinners of the S. A. E., the N. A. C. C., the Rubber Association and the Motor & Equipment Association. Meetings also will be held by the N. A. D. A., American Automobile Association, Automotive Electric Association and the Motor & Accessory Manufacturers (export group).

Price changes announced with the opening of the show were nearly all toward lower levels, making it certain that the public will receive more automobile value per dollar in 1929 than ever before. Even those manufacturers who are going into the show without price changes are offering greater value, either by increasing engine power, putting on additional equipment or furnishing more luxurious bodies. The great increase in the number of eights is a notable development.

Left—Charles D. Hastings, chairman, N. A. C. C. Show Committee. Right—S. A. Miles, manager of New York and Chicago national shows



Eight-Cylinder *Commander* is



New Studebaker Commander five-passenger sedan

Six-cylinder model is retained but engine is reduced from 354 to 248 cu. in. and speeded up to 3000 r.p.m. President tread widened to 59 in.

By M. Warren Baker

STUDEBAKER CORP. for 1929 offers an additional model, an eight-cylinder Commander, and a new engine of greatly reduced displacement and weight but practically the same power in the six-cylinder Commander, while marked refinements and improvements have been made in both of the President series.

The Commander Eight will be available in eight body styles at prices ranging from $1,525 to $1,675.

The appearance of the cars has been greatly changed. Double-drop frames are now used, giving a lower construction. The tread has been increased to 59 in. on the President and 58 in. on the Commander, allowing of the use of roomier bodies.

Both of the Commander models, the six and the eight, are built on the same wheelbase of 120 in. as used in the previous Commander. Frames, however, have been redesigned for greater strength and rigidity. The wheelbases of the new President lines have been increased from 121 to 125 and from 131 to 135 in.

Both President chassis carry the same engine, a refined edition of the engine formerly used. Improvements in design have raised the horsepower from 109 to 115 without changing the bore and stroke. The new Commander six engine develops 74 hp. and the new eight, 80.

Additional features of both the new President and Commander series include non-shatterable glass windshields, adjustable seats for the driver, non-glare rear-view mirrors, and on the President, an increase in leg room as a result of the longer wheelbases.

Window reveals and belt panels are set off by raised moldings in the new cars, and all exterior bright work is chromium-plated. De luxe models carry six wire wheels and tires as standard equipment, except the roadsters, which are fitted with five wire wheels. Two body models have been added, a five-passenger brougham and a four-passenger collapsible cabriolet. The broughams are equipped with plated windshield frames, while the cabriolets are fitted with plated window frames.

In its general engineering design the new Commander eight follows very closely its larger mate, the President. The engine is an eight-in-line L-head, with machined, dome-shaped combustion chambers. Its maximum horsepower is 80, at 3600 r.p.m., and its bore and stroke are 3 1/16 by 4¼ in., giving a piston displacement of 250 cu. in.

Bohnalite pistons are used in the new eight. Connecting rods are 10 in. long between centers, and have the babbitt metal poured directly into the steel. A crankshaft of 2 in. diameter is mounted in nine main bearings. The front bearing is 1⅜ in. long; the rear, 1 7/16 in. and the center, 1¼ in., while all intermediate bearings are 1 in. long.

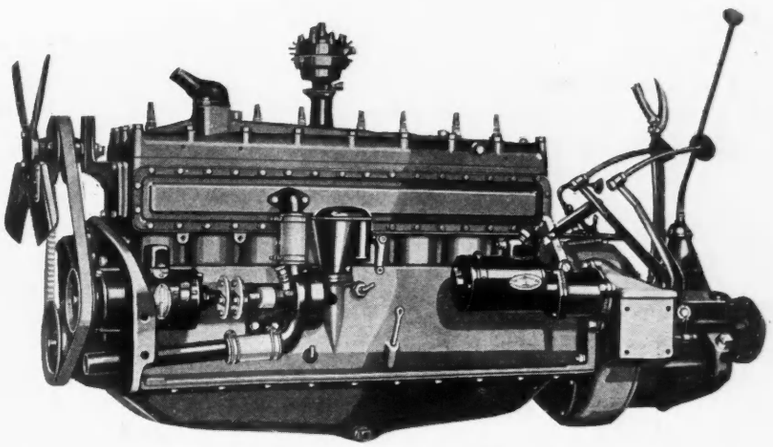
The camshaft, of the quiet-lift type, is supported in six bearings, which are pressed into the case and doweled against turning. A composition gear is used in the front-end drive. Chrome-nickel steel is used for the inlet valves, which have a clear diameter of 1 13/32 in., while silchrome is used for the exhaust valves, which have 1 9/32 in. heads. The valve lift is 5/16 in.

Lubrication is by pressure feed to all main, connecting rod and camshaft bearings. Connecting rod heads have bleeder holes drilled in them, which throw oil on

Added *to* Studebaker Line

the cylinder walls at each revolution. The oil pump, with screen filter, is mounted in the bottom of the crankcase, and the engine is fitted with an oil purifier and a crankcase ventilating system.

Carburetion is by a Stromberg UX2 single tube carburetor, and a Swan single downdraft manifold is used. The same spring-loaded choke which will be described in connection with the President eight is incorporated in the Commander carburetor. Manifold heating is controlled from the dash. Fuel feed is by an AC pump.



Studebaker President Eight engine. The output has been increased to 115 hp. by improvements in manifolding and carburetion

Front seats of new Studebakers are adjustable by means of a lever as shown

The rear engine supports have rubber mountings, while the two front legs are bolted rigidly to the frame.

Ignition and starting systems are Delco-Remy. Starter engagement is mechanical as on the President. The distributor is mounted in the center of the block and driven from the oil pump shaft. Rubber caps are fitted on the distributor and spark plugs, and all high tension cables are inclosed in metal conduits. The generator is mounted on the left side and driven by the fan belt.

The cooling system has a capacity of 3½ gal. and the water is circulated by centrifugal pump mounted on the left side of the cylinder block and driven through the generator shaft. Thermostatic control of circulation is provided in the cylinder head, and the 17-in. four-blade fan is mounted on an adjustable bracket.

A Long clutch, similar in design to that previously used on the President, is used on the new Commander. The driven member is slightly coned and the clutch is fitted with a brake to make engagement easy. The hub is rubber-cushioned to eliminate chatter.

A transmission of the standard three-speed type is mounted on the engine. Its six-splined shaft has the splines ground, and all gears are oil-treated and cyanide-hardened. The rear axle is of the semi-floating type, with spiral bevel driving gears and chrome-molybdenum steel axle shafts. Timken bearings are used at all points in the axle, there being double back-to-back bearings at the wheels. Bevel pinion mesh is adjustable from the outside.

Rear axle ratios are 4.36 to 1, except on the roadster, which has a ratio of 3.91 to 1. Hotchkiss drive is used. The propeller shaft is of electrically-welded tubing and is balanced. Spicer all-metal universal joints are fitted.

Semi-elliptic springs, 54 in. long in the rear and 36 in. long in front, are fitted with Fafnir ball bearing shackles.

Four-wheel mechanical brakes are provided. Drums are 12 in. in diameter and 1¾ in. wide, giving 236 sq. in. of braking surface. The brake hookup is the same as that used in the refined President.

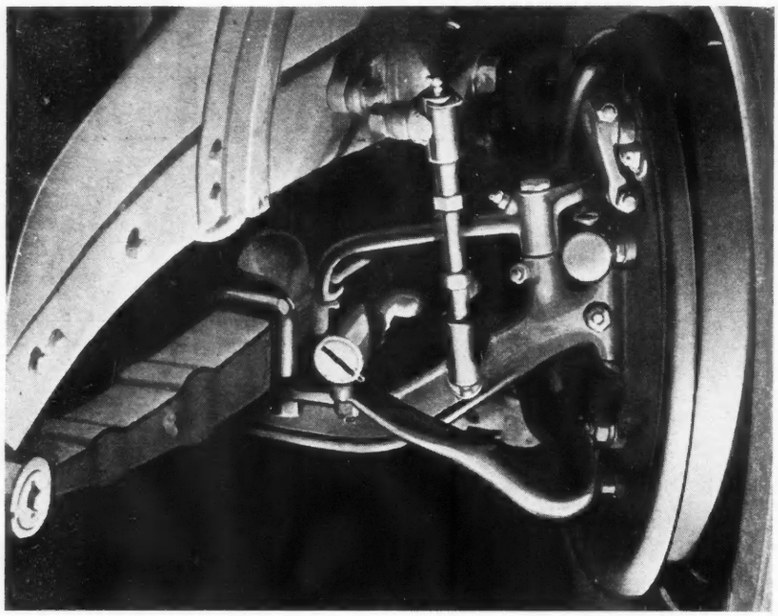
A Ross cam-and-lever gear is used for steering. Steering knuckle pins are lapped and chrome-plated as a protection against wear and rust. The reduction ratio is 15 to 1. Wheels are 19 in. in diameter and 5.50 six-ply balloon tires are used. Ten-spoke artillery wheels are supplied on the standard models, with six wire wheels on the de luxe chassis, two being side-mounted.

Six Cross-Members

Frame side-members on the Commander are 6½ in. deep with 2-in. flanges, and are stiffened at the forward drop. Six cross-members are provided, in addition to the front and rear engine supports.

The redesigned Commander six engine drops into the same chassis as the eight, the only difference between the two chassis being in the rear axle ratio, which for the six is 3.91 to 1 on the standard and roadster models, and 4.18 to 1 on the de luxe chassis.

Although of much smaller displacement, the new six engine develops within one horsepower of its predecessor. The new engine has a bore and stroke of 3⅜ by 4⅝ in., giving a piston displacement of 248 cu. in., as compared with 354 in the former model, and delivers an actual brake horsepower of 74 at 3000 r.p.m., as



Simplified crank and lever brake control system on Studebaker President Eight. The steering knuckle pins are lapped and chrome-plaited

compared with 75 at 2400 r.p.m. for the former Commander six.

Pistons in the new six are of cast iron, with four compression rings and one oil ring. Connecting rods are of drop-forged steel, the same length as in the Commander eight, and with the same type of lower bearings.

The heavy drop-forged crankshaft is statically and dynamically balanced, and mounted in four main bearings. The camshaft is driven by adjustable silent chain, and the valves are of chrome-nickel steel and silchrome steel for the inlets and exhausts respectively; they are actuated by mushroom type push rods. As in the eight, lubrication is by pressure feed to all main, connecting rod and camshaft bearings.

Stromberg 1¼-In. Carburetor

A Stromberg 1¼-in. carburetor is used, and fuel feed is by AC pump. The intake manifold is the Swan horizontal type. Starting and lighting are Delco-Remy, of the same type as on the eight, while the same oil cleaning and ventilating features are maintained.

The horsepower of the new President eight engine has been increased from 109 to 115, principally by improvements in carburetion and manifolding. The combustion chamber has been reduced slightly to step the compression ratio up from 4.75 to 5.10.

Changes in manifolding include the adoption of a Swan type duplex down-draft manifold. The carburetor is a Stromberg 1¼-in. duplex, fitted with an improved accelerating well and a new choke developed by D. G. Roos, chief engineer of Studebaker, in conjunction with Stromberg designers.

The new choke is spring-loaded so it will choke the engine very effectively when starting, with gradually decreasing choking effect as the speed increases. It was Mr. Roos' desire to design a "fool-proof" choke that will make impossible the flooding of the cylinders with raw gasoline when the driver forgets to close it.

The new carburetor also has been fitted with an air horn, to promote quicker warming up, eliminate fire hazard from backfiring, and make possible quieter operation. The exhaust manifold also has been redesigned to take the gases out nearer the center of the block.

Brake drums have been increased from 14 by 2 in. to 15 by 2¼ in., and the Perrot control has been replaced by the lever control, formerly used only on the Erskine. The braking system has been further simplified by connecting the hand brake to all four brake drums through a single cross-shaft, which system is said to have been approved by the Eastern Motor Vehicle Conference.

The rear axle of the President has been completely redesigned to provide for the increased engine power and to insure greater quietness. The ring gear diameter has been increased from 10.5 to 11.5 in., and the pitch has been so chosen that no pinion has less than 11 teeth. Axle shafts have been redesigned, and the rigidity of the entire rear system has been doubled. The rear axle ratio on the 135-in. chassis now is 4.31 to 1, except on the seven-passenger sedans with wire wheels, and on the limousines, which have a 4.64 to 1 ratio. The ratio on the 125-in. chassis is 4.08 to 1, except on the roadster, which has a 3.47 to 1 ratio, and the sedans equipped with wire wheels, which have a ratio of 4.31 to 1.

As in the new Commander eight, steering knuckle pins are lapped and chrome-plated. A Ross cam-and-lever steering gear is used, with a reduction of 16 to 1 for the 135-in. wheelbase and 15 to 1 for the 125-in. series.

Six splines are now used on the transmission shaft, instead of four, while the countershaft gears are all in one forging, and all gears are cyanided. Houdaille shock absorbers replace the former equipment on both sets of wheels. Both chassis now have spring covers. Fafnir ball-bearing shackles, announced in June, are retained on the new Presidents.

Six wire wheels and tires, two side-mounted, are standard equipment on all State models, except on the roadster, which carries five. Wood wheels on the standard models are fitted with new type split rims, to facilitate tire changing. Tires are 19 by 6.50 six-ply balloons on the 135-in. chassis, and 20 by 6 on the 125-in. chassis.

Both the President chassis have a double-drop frame reinforced by double flanges at the points of stress. Eight-inch side members are used, with 2½-in. flanges. Six braced cross-members, two of which are tubular, are fitted in addition to the two engine supports.

Seven body types are offered on the 135-in. wheelbase President. These include a seven-passenger regular sedan, upholstered in plaited mohair and equipped with artillery wheels; two seven-passenger sedans, upholstered in mohair or broadcloth, with six wire wheels and tires; a seven-passenger limousine, fitted with wire wheels and upholstered in rich broadcloth, and two seven-passenger phaetons, one with wire wheel and the other with wood wheel equipment.

One of the models which Studebaker expects to become most popular is the five-passenger brougham, available on the 135-in. President and both Commander chassis. It is fitted with a plated windshield frame and carries no visor. Tops are khaki color and the trunk is covered in the same material. Chromium-plated re-

taining rings on the wire wheels are an additional feature of these models. The trunk contains a hat box and two suitcases. Interiors are fitted with toggle grips, heavily upholstered arm rests on each side of the rear seat, and an additional folding rest in the center.

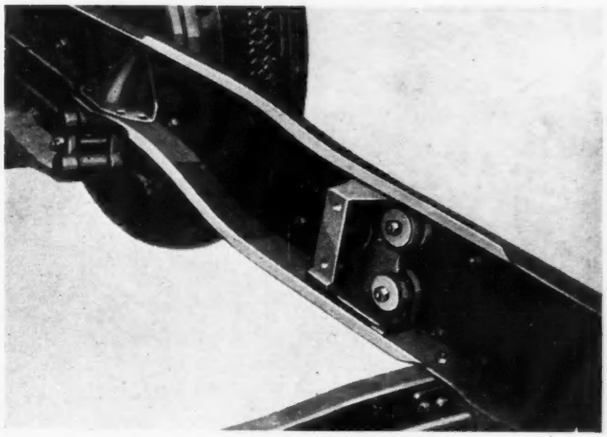
All interior hardware on these models is done in jewelers' finish. Domelights and corner lights, the latter controlled by the door, are provided, and two individual hassocks replace the conventional footrest in the President brougham. Folding ash receivers are recessed in the door panels.

This same interior equipment is found in all the sedans and limousines on the 135-in. President. State models are equipped with vanity cases and smoking sets, rich floor carpets in the tonneau, toggle grips and arm rests.

Instruments are grouped in a new design in both the Commander and President series, and include speedometer, hydrostatic gasoline gage, oil pressure gage and engine heat indicator. President models are fitted with extension cigar lighters, and the 135-in. models are equipped with an eight-day clock. Other equipment on all models includes a double-blade windshield wiper.

Six bodies are offered on the 125-in. President. There are two State five-passenger sedans, with wire wheels and in either mohair or broadcloth upholstery, a five-passenger regular sedan with mohair upholstery and artillery wheels, a four-passenger State victoria, with wire wheels and upholstered in mohair, a four-passenger fully convertible cabriolet with rumble seat and six wire wheels and interior dome in Bedford cord, and the President eight roadster which is upholstered in hand-buffed leather and carries five wire wheels.

The new Commander six and eight are offered in much the same range of body styles with the same upholstery options and wheel equipment.



Section of Studebaker frame, showing rubber-mounted rear engine support

A new array of color options has been developed. Commander six broughams, for instance, are offered in jet black with orange wire wheels, or in black relieved by ivy green belt panel and Mackinac green wire wheels. Manchuria blue with blue wheels and black fenders is offered on the regular sedan, while the regal sedan is finished in dark wine with Rubicelle belt panel and black fenders and wheels. Sapphire blue and Wedgewood green, in light and dark shades set off by tan reveals and belt, are typical of the colors offered on the President series.

Three Sixes and a Four in Durant Line

THE 1929 product of Durant Motors, Inc., of New York, so far as announced, will comprise three sixes and a four, all of which are developments of last year's models. The Durant 70, which supersedes the Model 75, will have a different engine; Model 66, which replaces the former Model 65, will be equipped with a four-speed transmission; Model 60 retains the same model designation, although the bore of its engine has been increased ⅛ in., to 2⅞ in. No mechanical changes have been made in the Durant Four, which is now called the Durant 40.

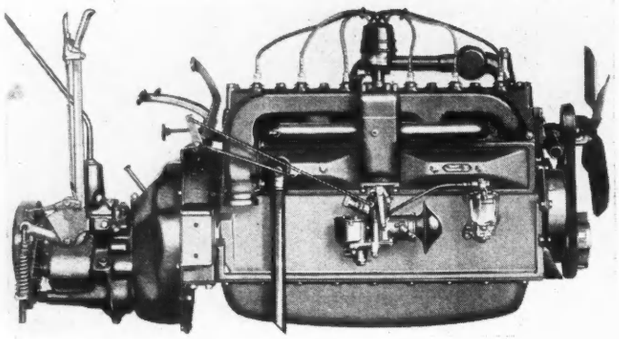
The engine of the 70 is a six of Continental make with a bore and stroke of 3⅜ x 4 in. Its displacement is about 215 cu. in. and its compression ratio 4.93 to 1. It is said that this engine develops a maximum brake horsepower of 61 at 2900 r.p.m. The silchrome steel exhaust valve has a clear diameter of 1.13125 in. and a lift of 0.3125 in. The chrome nickel steel intake valve has the same lift as the exhaust valve. Stem diameters are 0.340 in. The crankpin bearing is centrifugally cast and has a diameter of 1⅞ in. and a length of 1¾ in. Lubrication is provided by oil fed under pressure to the seven main bearings as well as the connecting rod and camshaft bearings. Other features of the powerplant include a Lanchester damper and a 1¼-in. Tillotson carburetor. The wheelbase of the 70 is 119 in., the same as in the former 75 model.

The four-speed transmission now used in the 66 is the same as the one originally introduced on the model 75 and which is continued on the model 70. The frame of the 66 has been stiffened by increasing the flange width and adding one cross-member, bringing the total to five. The wheelbase has been increased 2 in., and is now 112 in. The engine, axles, wheels, etc., remain unchanged, except that the gear ratio of the rear axle has been reduced slightly to take advantage of the four-speed transmission. Bodies of both the 66 and 70 are larger and roomier than formerly and the tops of all windows have been curved slightly. Radiators are higher and at the bottom are finished off with a gently curving splash apron that connects the two frame side-members. Manually-operated shutters are standard equipment on these cars. On the model 70 the spokes are heavier than those previously used and the hub and hub-cap much larger. In the front wheels larger bearings are used.

The brake equipment of the model 70 consists of the two-shoe Bendix Duo-Servo system. A Lanchester damper has been added to the equipment of the 60 and a pump type, accelerator well has been incorporated in the Tillotson carburetor.

Prices on the Model 60 are announced as follows: Touring car and roadster, $650; coupe, $685; coach, $695; sedan and cabriolet, $745. De luxe equipment, consisting of six wire wheels and fender wells, front and rear bumpers, baggage rack and tire covers, is $100 extra.

Model 66 prices are: Coupe, $895; sedan, $945. De luxe equipment for this model is $115 extra. The Model 70 sedan is $1,350 and the coupe $1,250, with an additional $125 for de luxe equipment. Prices on the four-cylinder model have not been announced.



Right side of enlarged Pontiac powerplant

Pontiac Engine Body Lines

1929 line, designated as "Big power due to larger bore and capacity. New rear axle

By A. F.

THERE is considerable difference in appearance between the Pontiac "Big Six," just announced by the Oakland Motor Car Co., and the previous Pontiac model.

Certain exterior features are similar to those on other General Motors cars, the radiator outline resembling that on the Oakland, and the downwardly and forwardly sweeping panel on the cowl being reminiscent of the LaSalle and the Oldsmobile. But the new Pontiac has its own distinctive features, including a horizontal depression along the center of the body panels completely around the car, a higher waistline and hood, a single group of horizontal hood louvres, and new roof lines.

Changes which have been made in the chassis contribute toward better performance, smoother operation, and longer life. There is more power in the larger engine, the bore and stroke having been increased from 3¼ by 3¾ to 3 5/16 by 3⅞ in. This has resulted in an increase in piston displacement from 186 to 200 cu. in., a matter of not quite 10 per cent, but the power has been increased by nearly 20 per cent, from 48 hp. at 2850 r.p.m. to 57 hp. at 3000 r.p.m. Among the reasons for the increase in specific output may be mentioned the considerably increased valve capacity, inlet valve diameters having been increased from 1 3/16 to 1¼ in. and the valve lift from 9/32 to 5/16 in. The compression ratio remains the same at 4.9 to 1.

1¼ in. Marvel Carburetor

A 1¼-in. Marvel carburetor is now fitted and the intake manifold passages have been increased ⅛ in. to 1¼-in. diameter.

By making the crank arms heavier and fully counterweighting the shaft to increase bearing loads, it has been possible to retain the same main bearing sizes in spite of the greater displacement. Complete with counterweights, the shaft weighs 53 lb.

An harmonic balancer of the same type as is used on the Oakland All-American Six has been adopted, and is assembled to form a unit with the fan pulley.

The pistons, which are still made of semi-steel, are now cast in permanent molds, which gives better assurance against blow holes.

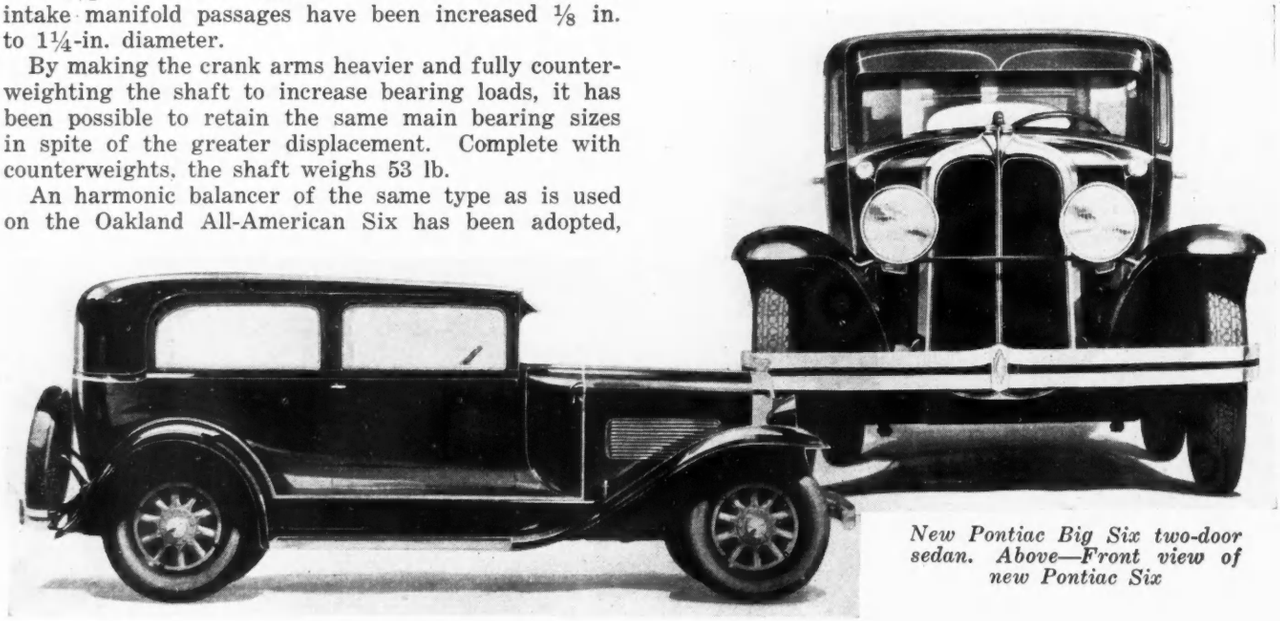
Flat valve-spring dampers, of the same type as used on the Oaklands, have been adopted on the new Pontiacs, to kill valve surge. A further change is the provision of a quieting ramp on the cams.

A 10-spline instead of six-spline shaft is used in the transmission, and a new tooth form is used which gives an increased arc of contact.

Oakland-Type Rear Axles

Rear axles are new and are similar to those in the Oakland, except for the brakes and gear ratio. They are thus much stronger than formerly. The standard ratio is now 4.42 to 1, as compared with 4.36 to 1 formerly. The axle has a conventional pressed-steel banjo-type housing, chrome nickel steel axle shafts, Hyatt roller bearings at the wheels and New Departure ball bearings elsewhere. A pinion and gear with a ratio of 5.2 to 1 are furnished as special equipment.

The new Midland Steeldraulic brakes adopted on the new Pontiac are another outstanding improvement in



New Pontiac Big Six two-door sedan. Above—Front view of new Pontiac Six

Size Increased, are Changed

Six," has 20 per cent more stroke and greater valve and Steeldraulic brakes.

Denham

these cars. These are 11 in. in diameter and 1½ in. wide.

With the new axle, Hotchkiss drive has been adopted in place of the former torque tube drive. Accordingly, the new Pontiac has two Mechanics Machine Co. metal universals and a 2-in. tubular propeller shaft.

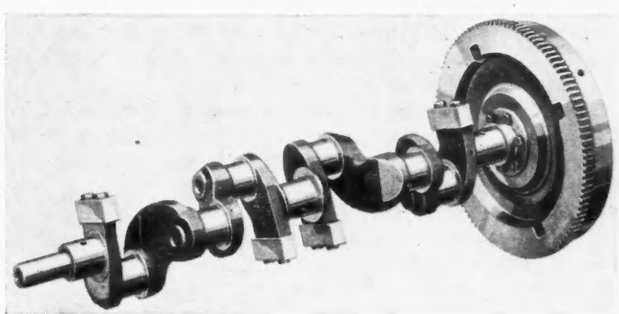
Changes in the front axle are confined to a strengthening of the I-beam section at the ends, to take care of the increased brake torque reaction. Adoption of the new brakes has made it possible to decrease the turning radius to 19 ft.

In addition to changes in the springs to adapt them to the Hotchkiss drive, their width has been increased from 1¾ to 2 in. Bumper brackets are now integral with the spring horns. Lovejoy shock absorbers, furnished at additional cost, are mounted along the frame side rails in front and on gusset plates at the rear.

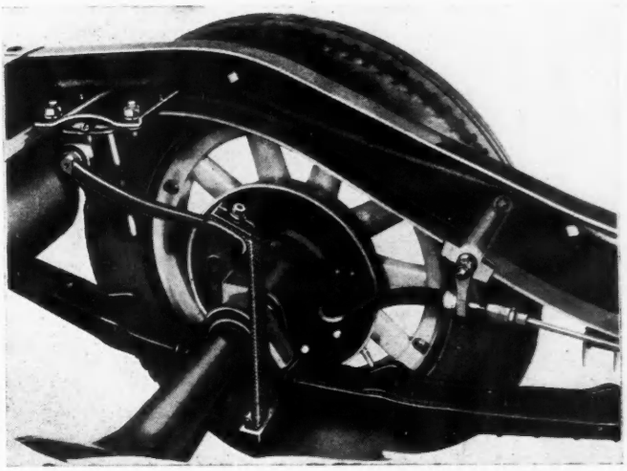
Further chassis changes include a stronger tire carrier with forged supports, a larger (13-gal.) fuel tank, and the substitution of a transmission brake for the internal rear wheel emergency brake. The new emergency brake has a drum diameter of 6½ in., and a lining width of 1½ in.

New Instrument Board

Passing now to body features, there is a new instrument board with individually-mounted instruments and control, and dual direct lighting, somewhat similar to that used on the Oakland. The hood sill construction has been simplified by making this part of the front fender. The rear end of the cars has been dressed up with a corrugated enameled plate over the fuel tank. Headlamps on the new cars are larger, and the double-filament bulbs are controlled by a foot button as formerly.



New counterweighted, statically and dynamically balanced crankshaft on Pontiac Six



Form-fitting spring covers and four Lovejoy hydraulic shock absorbers are furnished with the Pontiac Six at a slight increase over the list price. Photo also shows hook-up of new mechanical four-wheel brakes

Chromium plating is used on all exterior bright parts. All closed bodies have adjustable front seats, including the driver's seat on the two-door sedan. Visors are all-metal, as are rear quarter panels. The front fender tie-rod now a forging instead of pressed steel.

Standard equipment on all models includes an automatic windshield wiper, a rear-view mirror, a dash gasoline gage, and a combination transmission and ignition lock. Prices have not been changed.

New Locomobile Eight

LOCOMOBILE has brought out a new eight-cylinder series, known as the 88, in wheelbase lengths of 130 and 140 in. The engine is an L-head design with cylinders in line and has a bore and a stroke of 3¼ and 4½ in. respectively. Five main bearings support the crankshaft, which is drilled for pressure lubrication of the crankpins. The camshaft is driven by a Link-Belt chain. Pistons are of aluminum and carry four rings, the lower one being of the oil control type. Engine equipment includes DeJon electrical units, a USL battery, a Stromberg carburetor, a Wall rectifier and an Air-Maze air cleaner.

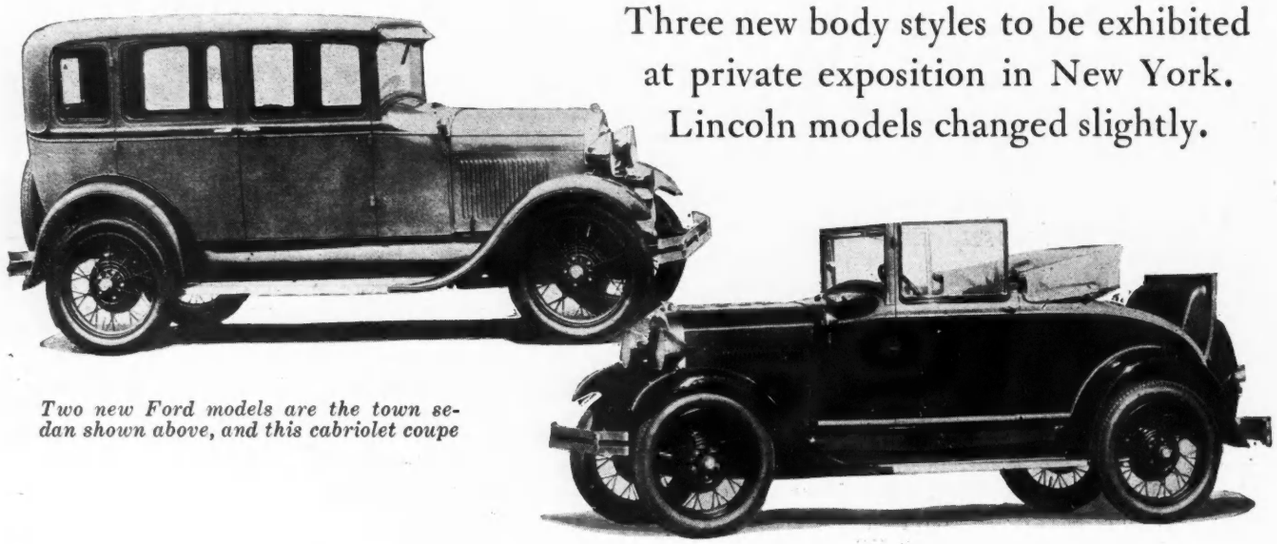
The single-plate clutch and three-speed transmission are assembled with the engine in a unit powerplant which is supported at four points, rubber cushioning being provided at the two rear supports. The rear axle is a semi-floating unit and its reactions are taken through the springs. Rubber shock insulator spring mountings are employed. The steering gear is a cam and lever design. Tires are 30 by 6.50. Service brakes operate internally on drums at all four wheels, while the hand brake operates internally at the rear wheels only.

The 8-70 series has been discontinued.

IN addition to the automobile show which is to be held in Rome this month, the automobile show in Milan, which has been held for a number of years as part of the Milan Sample Fair, will also be held again. The first is the show which has the sanction of the Bureau Permanent of Automobile Manufacturers Associations in Paris. At the Milan show automobile equipment will be specially featured.

Latest *Fords* Fitted *With A*

Three new body styles to be exhibited at private exposition in New York. Lincoln models changed slightly.



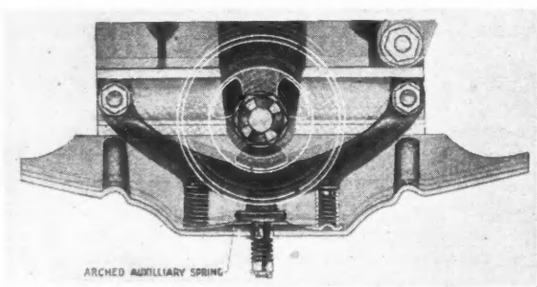
Two new Ford models are the town sedan shown above, and this cabriolet coupe

SINCE the introduction of the Model A Ford, a little more than a year ago, a number of changes have been made in its design. Quite recently the multiple-disk clutch, which has been a feature of Ford cars for many years past, was discarded in favor of a single-plate design. The new clutch is now standard on the Model AA truck as well as on the passenger car.

This clutch consists of two major parts—the cover plate assembly, and the clutch disk assembly. The outer or cover plate assembly includes a cast-iron outer driving plate and a stamped cover plate in which are mounted 12 pressure springs and six release levers. These springs act directly against the pressure plate and compensate for wear of the friction linings. This eliminates the necessity of making any adjustments of the release levers.

Facings are Molded

The driven member of the clutch disk assembly is composed of a flat steel disk and two friction facings. The facings, which are molded, are riveted to both sides of the driven disk. The disk is slightly dished in the form of a cone. With this construction the outer and inner edges of the clutch disk facing start to engage first, and as the clutch engages, the spring pressure flattens out the clutch disk and the entire lining surface picks up the load evenly.



Ford spring-type front engine mounting

To reduce the transmission of engine vibration to the chassis, all cars and trucks are now equipped with a spring-type front engine mounting. This can be added to cars and trucks now in use.

This mounting bolts rigidly to the cylinder block in place of the former rigid mounting. At the base of this fitting are two heavy coil springs which rest on the front cross-member and support the engine. To limit the up and down travel a third coil spring is mounted below the cross-member. An extension of the mounting that is bolted to the cylinder block passes through this third spring, and by means of a nut, held with a cotter key, the hold-down tension is regulated. To form a seat for the two springs that support the engine, a flat piece of spring steel is laid on the cross-member.

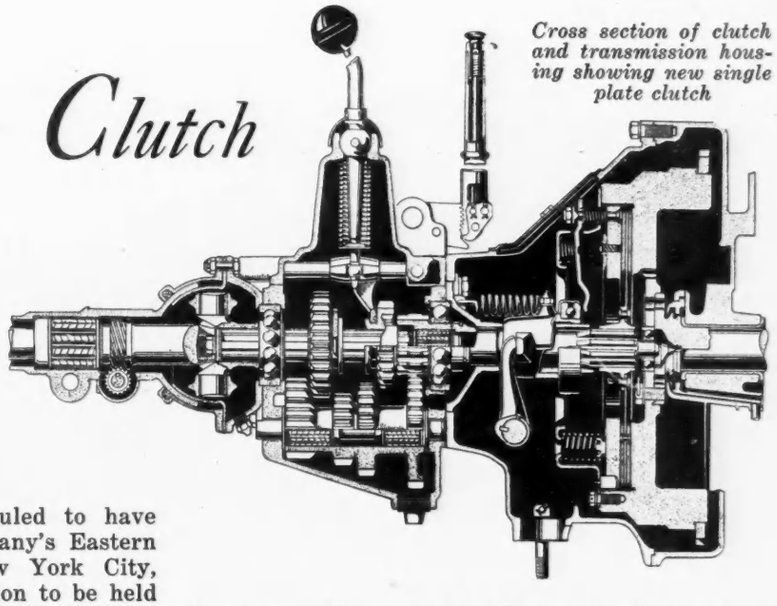
The first major change in the Model A car was made about eight months ago, when it was announced that a different brake system would be used in the future. Up to that time the rear service brakes were set by a hand lever for parking, while now all cars are provided with a separate emergency brake on the rear wheels. This emergency brake was described in *Automotive Industries* some time ago.

Other changes, while relatively minor, are interesting. In the carburetor the former double venturi has been displaced by a single venturi and a secondary well. In the ignition unit the breaker arm spring is now riveted around the stud and this stud is case-hardened to reduce the hazard of theft.

The starting motor is now equipped with plain bushings instead of ball bearings. Also a Bendix drive is now used. In the starting switch, flat contacts replace the inclined ones. The battery bracket has been redesigned to give better support to the battery.

The steering arm has been stiffened and the drag link and spindle arms have been redesigned. The redesigning of the spindle arms was for the purpose of reducing tire wear on turns by giving the wheels a little more toe-out when turning. The change in the drag link gives greater clearance between this part

Single Plate Clutch



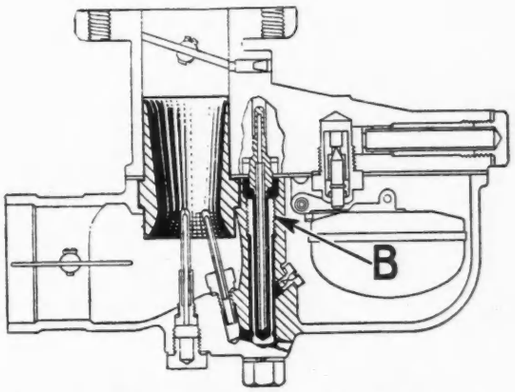
Cross section of clutch and transmission housing showing new single plate clutch

and the brake mechanism. An additional pressure lubricating fitting has been added to the steering gear housing where the steering arm passes through. An extra pair of lubricating fittings have also been added at the ends of the brake cross-shaft.

Whereas the truck is ordinarily provided with a worm drive, a number have been turned out with a bevel gear final drive recently.

Three new Ford models are scheduled to have their first public showing in the company's Eastern headquarters at 1710 Broadway, New York City, as a part of the Ford Service Exposition to be held there on the same dates as the National Automobile Show in the Grand Central Palace. Only the Lincoln Division of the Ford Motor Co. will be represented at the show, where five Lincolns will be on display.

The three new Ford models are a cabriolet coupe,



Cross section through carburetor showing secondary well B

a station wagon and a town sedan. Their prices were not announced. Aside from the unveiling of these new body styles, the exposition will be devoted chiefly to demonstrations in the proper way to grease and lubricate a Ford car, how seat and fender covers are used at Ford service stations for protective purposes, and even the procedure advocated for washing the machine. Just what takes place when a Ford car is undergoing repair also will be depicted.

The engine will be shown with the cylinder head removed ready for valve grinding, and a special valve-grinding device designed to hold the loose parts will be explained. A stand on which the motor may be turned in any desired direction, saving the mechanic many steps and considerable labor, also will be exhibited.

Methods of aligning and refitting the crankshaft, reboring the cylinders and rebabbitting the bearings will be shown and explained. The entire subject of axles, front and rear, will be treated. The rear axle will be displayed assembled and dismantled. Tools used in working on the rear axle, and the special bench used for repairing that axle will be on view.

Other exhibits at the exposition will include equipment for paint spraying and Ford steel spoke wheels. Still others will indicate how the oil pump of the Model A and the Houdaille shock absorber operate.

It was announced that the Lincoln cars exhibited at the show would comply with the Lincoln policy of not bringing out yearly models that would tend to antiquate existing cars.

The outline of the radiator shell of the Lincoln has been changed somewhat. The shell has been given a slight shoulder where it meets the hood, concealing the edge of the hood from view when one looks at the car from the right or left front quarter. The new design is said to eliminate any tendency toward a gap between the hood and the radiator shell, since the forward edge of the hood will always lie below the shell. The shell has been increased in depth, and now has the appearance of being narrower and deeper, although the radiator core has not been increased in size. Additional louvres have been placed in the side of the hood.

All exterior trimmings of the Lincoln will be of chromium plating, applied on nickel finish, to give greater durability. Shatterproof glass has been used throughout the cars, and will be on all future Lincolns.

New rubber mountings are used for the rear engine support. The design is said to be entirely different in application from all other attempts at rubber engine mountings, and, according to Lincoln engineers, it is the most effective vibration eliminator for the Lincoln type engine that has been developed.

The braking system of the Lincoln now is fully inclosed with internal expanding shoes on both front and rear shoes. An independent emergency and parking brake also is inclosed in the rear drum, thus giving six independent inclosed braking surfaces. The change has made possible the extension of radiating fins on the drum to prevent overheating of the brakes.

The molding on the edge of the running board has been redesigned to make it continuous with the fender edge. The change was a result of the alteration of the fender lines.

To permit the lowering of the front seat, the tool box under it has been eliminated. A tool box has been installed behind the valance of the right running board directly opposite the battery box container.

Average Retail Car and Truck Prices Lower in 1928

Preliminary facts and figures compiled by Alfred Reeves show substantial gain in total wholesale value, however, due to increase in production.

PRELIMINARY facts and figures of the automotive industry for 1928, just compiled by Alfred Reeves, general manager of the National Automobile Chamber of Commerce, show, among other things, that the average retail price of the 4,044,000 passenger cars produced in the United States and Canada during the year was $876. The 586,000 trucks produced during the same period sold at retail for an average of $955. These represent substantial reductions over the preceding year (1927), when the average retail passenger car price was $953 and the average truck price $1,053.

Despite the lower retail prices, the total wholesale value of the year's production of cars and trucks was $3,045,820,000, as compared with $2,556,750,000 for 1927. This increase in wholesale value was due, of course, to the heavy increase in production in 1928.

Another increase is recorded in the percentage of closed cars produced, 85 per cent being of this type as against 80 per cent in 1927.

Export sales of motor vehicles ran 26 per cent above 1927.

Automotive freight shipped over railroads in 1928 totaled 3,600,000 cars. This compares with 3,125,000 cars in 1927.

Following is Mr. Reeves' resume:

PRODUCTION

Cars and trucks produced in U. S. and Canada	4,630,000
Cars	4,044,000
Trucks	586,000
Production of closed cars	3,441,600
Per cent of closed cars	85%
Wholesale value of cars	$2,630,500,000
Wholesale value of trucks	$415,320,000
Wholesale value of cars and trucks	$3,045,820,000
Average retail price of cars	$876
Average retail price of trucks	$955
Tire production in U. S.	78,500,000
Wholesale value of rubber tires for replacement	$670,000,000
Wholesale value of parts and accessories for replacements, also service equipment	$950,000,000

REGISTRATION

Motor vehicles registered in U. S.	24,750,000
Cars	21,630,000
Trucks	3,120,000
World registration of motor vehicles	31,725,000
Per cent of world's automobiles in U. S.	78%
Motor vehicle registration on farms	5,450,000
Miles of surfaced highway	615,000
Total miles of highways in U. S.	3,013,584
1928 highway expenditures	$1,500,000,000
Number of persons employed in motor vehicle and allied lines	4,110,000
Taxes on motor vehicles	$785,386,000

RETAIL FINANCING

Per cent new cars sold on time	58%
Per cent new trucks sold on time	52%
New cars average note at time of purchase	$606
Used cars average note at time of purchase	$295
New trucks average note at time of purchase	$832

AUTOMOBILE'S RELATION TO OTHER BUSINESS

Number of carloads of automotive freight shipped over railroads in 1928	3,600,000
Rubber used by automobile industry	85%
Plate glass used by automobile industry	60%
Copper used by automobile industry	12%
Iron and steel used by automobile industry	15%
Gasoline consumption by motor industry	80%
Gasoline used by motor vehicles, 1928 (gal.)	10,860,000,000
Motor oil consumption (gal.)	434,000,000
Crude rubber used by motor industry, 1928 (lb.)	814,000,000
Cotton fabric used in tires, 1928 (lb.)	299,500,000

MOTOR TRUCK AND MOTOR BUS USE

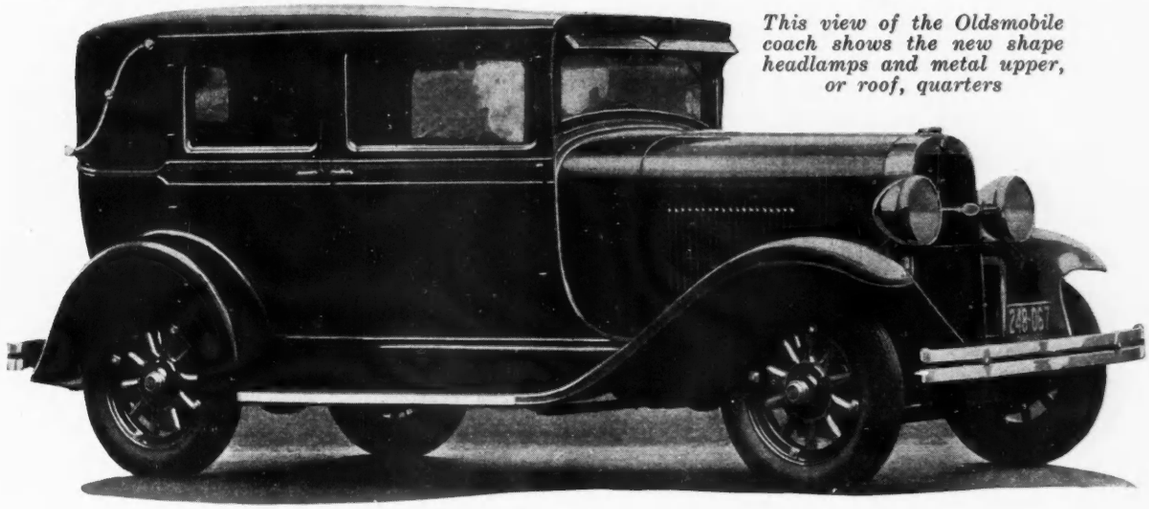
Motor trucks in use	3,120,000
Motor truck owners	2,271,000
Motor buses in use	92,000
Consolidated schools using motor transportation	14,850
Buses used by street railways	9,900
Buses used by steam railroads	1,250
Street railways using motor buses	365
Steam railroads using motor buses	67
Railroads using trucks as part of shipping service	59

FOREIGN SALES

Number of motor vehicles sold outside U. S. (U. S. exports and Canadian output)	810,000
Value of motor vehicles, parts and tires sold outside U. S.	$680,600,000
Per cent increase in foreign sales over 1927	26%
Per cent sold outside U. S.	17.5%
Number of motor vehicles imported	520

MOTOR VEHICLE RETAIL BUSINESS IN U. S.

Total car and truck dealers	53,125
Public garages	51,600
Service stations and repair shops	95,400
Supply stores	79,000
Gasoline filling stations	317,000
Gasoline pumps in use	604,000



This view of the Oldsmobile coach shows the new shape headlamps and metal upper, or roof, quarters

Oldsmobile Engine Speeded Up

Power output increased from 55 hp. at 2700 r.p.m. to 61 hp. at 3000 r.p.m. Connecting rods drilled.

OLDS MOTOR WORKS is going into 1929 with only minor changes on its cars. In spite of the slowness with which this company got into production last spring, its 1928 production was roughly 91,000 cars, of which about 20,000 were produced in the last quarter. This compares with a total of 54,000 in 1927.

On all closed models the front seats are now adjustable. At the front of the cars there are deeper headlamps, a chromium-plated fender tie-rod incorporating the Oldsmobile nameplate, and an Oldsmobile coat-of-arms on the radiator shell.

Further back there is a new style paneled all-metal visor. A Trico windshield wiper, with automatic return when shut off, is applied. The upholstery is new, with wider piping. A novel feature is the shielding of the instrument lights with green celluloid which casts a green light over the instruments, thus reducing the glare. A change in body design is that the upper body, or roof side-panels, are now of metal instead of fabric, except on the landau-sedan.

The most important mechanical development is an increase in horsepower from 55 at 2700 to 61 at 3000 r.p.m., resulting in an increase in the top speed of about 3 to 4 m.p.h. This has been achieved by the use of new valves and a larger carburetor. The latter is a 1¼-in. Schebler provided with primary air choke and air adjustments for intermediate, low and high speeds. Mounted on the carburetor is a new metal-wool-type AC air cleaner, which is said to offer less resistance to the passage of air than the former centrifugal type, as well as to remove small dust particles more effectively.

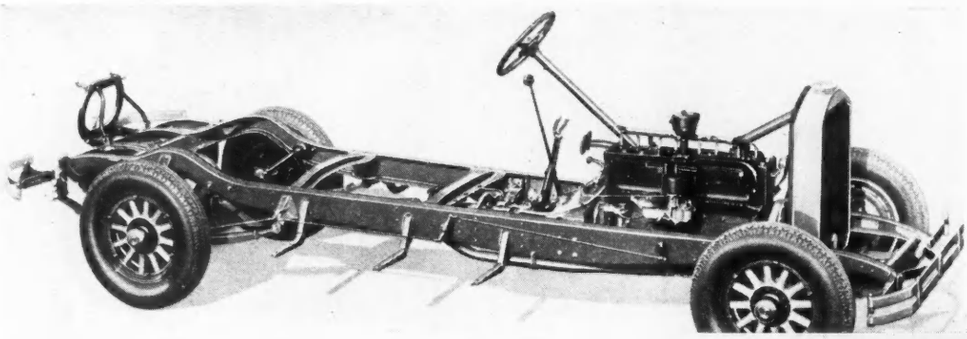
Valve head diameters have been increased ⅛ in. for the inlet and 1/16 in. for the exhaust. This gives an inlet diameter of 1 17/32 and an exhaust of 1 13/32 in. At the same time both valves have been changed to a 30-deg. seat design, which gives a greater effective area of opening for a certain clear diameter and lift and is claimed to also give longer valve seat life. Stem diameters are also larger, 11/32 in. on the inlet as compared with .3415 in. formerly, and ⅜ in. on the exhaust, compared with .3405 in. for 1928. Stem ends are now grooved for a split cone.

Connecting rods have been materially changed, although the same dimensions are retained. In the first place, they have been drilled for pressure lubrication to the piston pins. Besides, both ends are now hollow milled on the outside, whereby the weight of the rod is reduced about 3¼ oz. By removing the oil ring from the skirt to above the piston pin, it is sought to improve the cylinder lubrication, especially in cold-weather warming up. An adjustable fan pulley is provided and the V-type fan belt has been increased 1/32 in. in width, to 13/16 in.

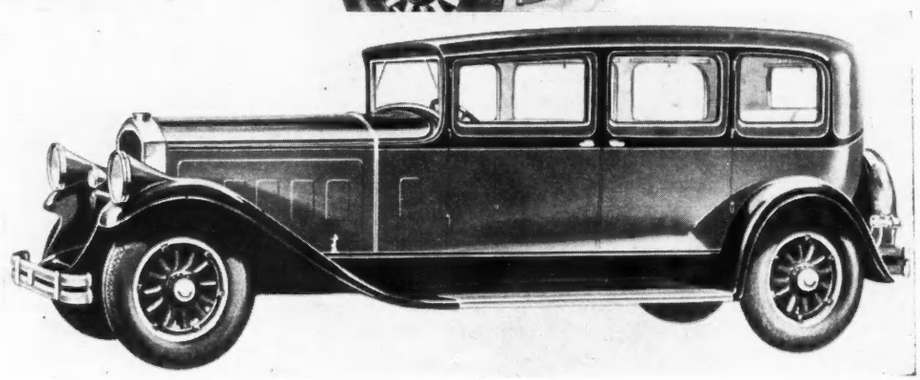
The only change of any importance in the chassis is in the steering gear, whose ratio has been increased from 14 to 16 to 1, with somewhat heavier gears.

Front view of 1929 Oldsmobile, showing new fender tie-rod, headlamps stanchions, coat-of-arms on radiator, and sun visor

Pierce-Arrow Sixes Dropped



Left front view of new eight-cylinder Pierce-Arrow chassis



This view of the five-passenger standard sedan on the 133-in. wheelbase chassis gives an idea of the modernization effected in Pierce-Arrow cars for 1929

THE Pierce-Arrow Motor Car Co. has entirely dropped its six-cylinder cars, and for 1929 will offer two lines of eight-cylinder machines, the chassis of which differ only in respect to wheelbase. Neither the engine nor the chassis departs radically from established practice, the endeavor of the engineers having been to incorporate in the design only features which have worked out best in the eight-cylinder field.

Mechanical features of the chassis include a Long torsional-vibration-damping two-plate clutch, a standard three-speed transmission in an aluminum case, Spicer universal joints, a semi-floating rear axle with hypoid gear reduction, Fafnir ball bearing shackles, Houdaille shock absorbers, Bendix brakes, and a Gemmer "hourglass" steering gear.

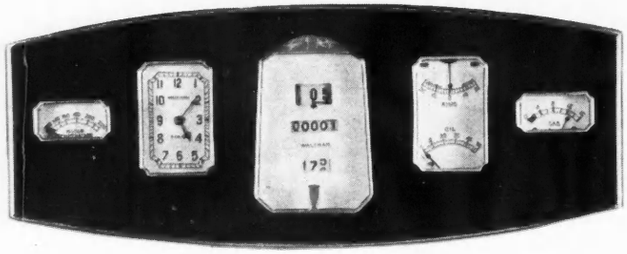
Body lines are new and decidedly more modern than previous Pierce-Arrows, as may be judged from the illustrations. Moreover, the bodies include such features as non-shatterable glass all around, adjustable driver's seat, both top and side cowl ventilators, anti-rumble compound on the steel body panels, steel running boards, Marshall cushion springs, and complete de luxe equipment.

At the time of writing prices had not been announced, but it is expected that the cars will sell in the same price range as the previous models, or a little higher. There are 13 body models altogether, eight on the shorter wheelbase chassis (133-in.) and five on the longer chassis with a 143-in. wheelbase. Following is a complete list of models:

133-in. wheelbase	*143-in. wheelbase*
5-p. Brougham	7-p. Sedan
5-p. Sedan	Inclosed drive limousine
7-p. Sedan	2-4-p. Convertible coupe
5-p. Town sedan	7-p. Touring
2-4-p. Coupe	All-weather sedan
4-p. Sport touring	
2-4-p. Runabout	
4-door Inclosed drive limousine	

With a bore and stroke of 3½ by 4¾ in. the engine develops a maximum of 125 hp. at 3200 r.p.m. A maximum speed of 85 m.p.h. is claimed for these cars. The power curve is fairly flat between 3000 and 3600 r.p.m. A maximum torque of around 250 lb.-ft. is developed at 1200 to 1300 r.p.m., and this high torque should mean very good acceleration.

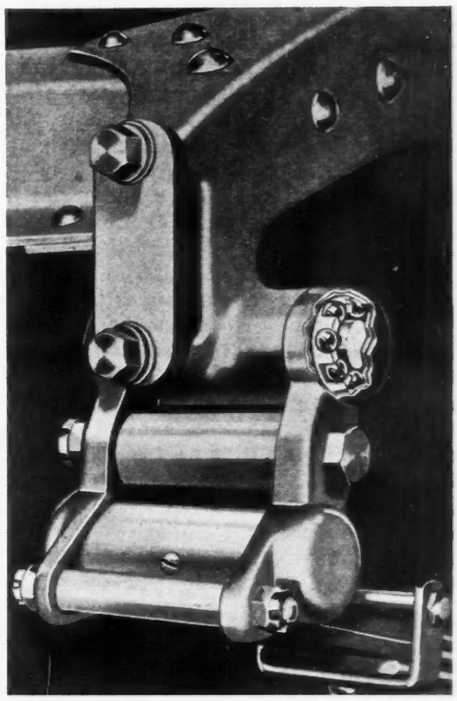
The engine has a nine-bearing 2⅝-in. crankshaft, with a Lanchester damper at the front. Bearings are of the Chadwick interchangeable type. The total bearing length is 13 13/32 in. Connecting rods are are of I-beam section, 9 1/32 in. long between centers. Crankpin journals are 2¼ in. in diameter and 1¼ in. long, the rods having spun-in babbitt. Piston pins, which are of 15/16 in. diameter, are locked in the rods, and bear directly in the bosses of the aluminum-alloy in-



New Pierce-Arrow instrument board. The outline of the radiator shell is repeated in the speedometer mounting. The clock is standard equipment on the 143-in. chassis

for New Eights

Line consists of two models of different wheelbase, both using 3½ by 4¾ in. engine developing 125 hp. at 3200 r.p.m. Bodies modernized. Prices not announced.



Interesting arrangement of Fafnir ball-bearing spring shackles on new Pierce-Arrow

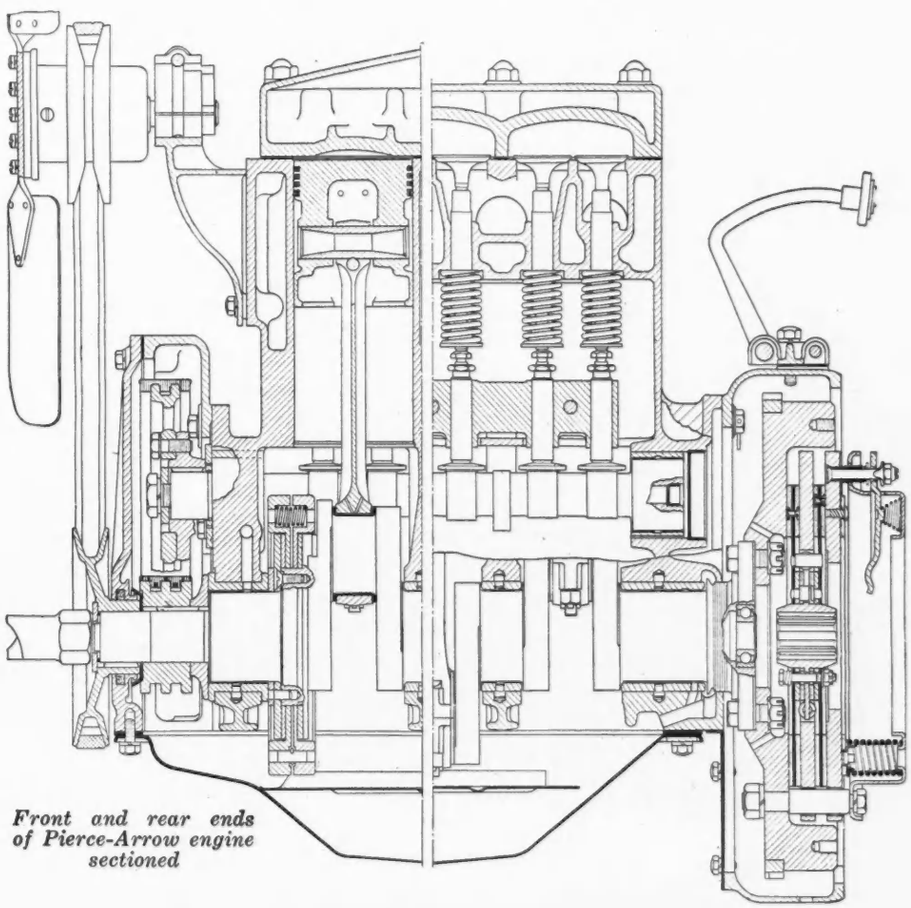
var strut pistons. The latter are fitted with three ⅛-in. compression rings and one 3/16-in. oil seal ring.

Inlet valves have a head diameter of 1 21/32 in. and are of nickel-alloy steel, while the silchrome-steel exhaust valves have a head diameter of 1 9/16 in. The stem diameter is ⅜ in. Valves are slightly inclined, to permit the use of large crankshaft and camshaft sprockets for the Morse chain front-end drive. Valve springs have closed damping coils at the top.

The camshaft has six bearings, the diameters of the bronze-backed babbitt-lined bushings ranging from 2.094 in. at the front to 2.251 in. at the rear. A separate eccentric is provided for the AC fuel pump drive.

Combustion chambers in the removable heads are of the offset type, with a low clearance space over the piston, and are fully machined to give a compression ratio of 5.1 to 1. The cylinders and upper crankcase half are cast as a unit, while the chain cover is of aluminum and the oil pan of pressed steel.

Generator drive is also by means of the front end chain, which is provided with an automatic take-up idler. Bolted to the generator housing is the housing for the single-impeller water pump, the drive for the latter from the generator armature shaft being through a tongue and groove coupling. The water pump delivers water to the cylinder block through a side riser bolted to the block and provided with a baffle plate to insure even-water distribution to all parts of the engine. Thermostatically-operated vertical radiator shutters regulate the water temperature.



Front and rear ends of Pierce-Arrow engine sectioned

Engine lubrication is by a conventional submerged gear pump, driven from the camshaft through a vertical driveshaft at the left of the block, the upper end driving the distributor. Oil is carried under pressure to all crankshaft bearings, and to the front-end chain. The three rear camshaft bearings are lubricated from the rear end and the front bearings from the front end, through holes drilled in the camshaft. The engine has four-point support.

Dual carburetion and dual manifolding has been selected for this engine. The 1¼-in. carburetor is of Stromberg manufacture, and the manifold is of the downdraft Swan type with one branch supplying the four center and one the four end cylinders. It is finished in vitreous enamel. A heat-

control valve is incorporated in the central riser. Exhaust gases are carried to the front of the engine and down, to keep the heat and any escaping fumes away from the dash and the body. Part of the air for the carburetor is taken in through the valve housing, to serve as a crankcase ventilating system. An oil filter is also mounted on the engine.

The distributor is of the side-outlet double-breaker type, with one breaker firing the four central and one the four end cylinders. Each breaker is connected to its own coil. Electrical units are of Delco-Remy manufacture. Starter engagement is by manual shift.

A V-belt is used to drive the aluminum bladed fan. An interesting little feature is the provision of a pipe plug in the exhaust manifold, the removal of which assists in tuning the engine at idling speeds.

In unit with the engine are the three-speed transmission built by Brown-Lipe and the two-plate long clutch with its vibration-damping spring-loaded driving plates (previously described in these columns). The four clutch facings have an outside diameter of 8⅛ and an inside diameter of 5¾ in. Ball bearings support the transmission main shaft, which has a roller-bearing pilot. Countershaft gears form a built-up cluster riding on plain bearings on a stationary shaft. The reverse idler is also mounted on a plain bearing. Shifter bars in this transmission are fully inclosed.

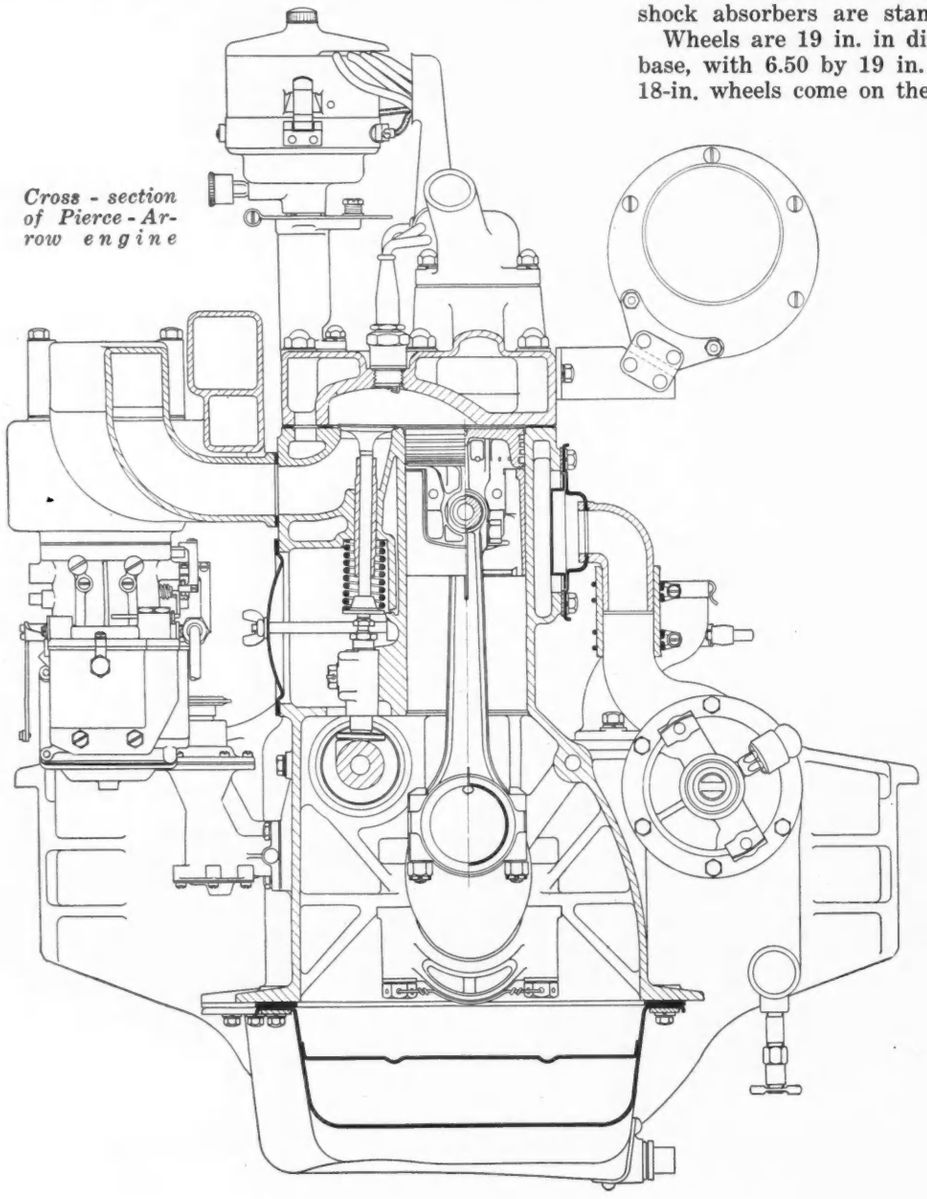
The drive to the rear axle is by means of a 2½-in. tubular propeller shaft fitted with Spicer universals. Torque reaction is taken through a pressed-steel torque arm, as in former Pierce-Arrows. Hypoid gears are used. The housing is of the banjo type. Wheel bearings are double Timkens.

Adjustable Steering Column

An adjustable steering column is a feature of the Gemmer steering gear designed for these cars. The gear has a reductiton ratio of 18 to 1. Bendix internal four-wheel brakes with 15-in. drums and 2¼-in. lining are supplemented by a hand-operated transmission emergency brake.

Frames are of pressed steel (5/32-in. stock), with a maximum channel depth of 8 in. and 2½-in. flanges. Springs are semi-elliptic all around and of chrome-vanadium steel; they are filled with Fafnir ball-bearing shackles. Front springs are 38 in. long and 2 in. wide; rear springs, 60 in. long and 2½ in. wide. Spring covers are fitted as standard equipment; bumper brackets are integral with the frame horns, and Houdaille shock absorbers are standard, as already mentioned.

Wheels are 19 in. in diameter on the shorter wheelbase, with 6.50 by 19 in. tires, while 7.00 in. tires on 18-in. wheels come on the larger cars.



Cross - section of Pierce - Arrow engine

Body lines can probably best be judged from the illustrations reproduced on these pages. Attention may be called, however, to the radiator shell outline, which harks back to earlier Pierce-Arrow days; to the low overall height effect, produced by the deep roof, wide belt molding and cheat lines along the bottom of the body panels, and to the louvre doors on the 143-in. wheelbase chassis. Non-shatterable glass is used for all windows. Both top and side cowl ventilators are used. On the open cars there are even two top ventilators in addition to those of the kick type in the cowl sides.

Running boards are of steel, rubber-covered, and trimmed with chromium-plated brass moldings. Front fenders are of one-piece, crowned construction. The characteristic fender headlamps are optional with the purchaser. If standard headlamps are desired, parking lamps, stream-lined into the fenders, are supplied at no extra cost.

All body pillars are steel-faced. Anti-rumble compound is applied to all body panels. A 7/16 in. covering of Masonite is applied to the dash for heat and

noise insulation. Windshields of closed cars are of the Monocontrol operated swinging type. Folding windshields are supplied on open cars, including a cowl windshield on the touring models.

In the 133-in. wheelbase series cars the instruments are grouped in a decorative panel and include a dash gasoline gage and engine thermometer in addition to the usual instruments. On the 143-in. wheelbase series, the instruments are individually mounted, a clock also being included on this model. Standard equipment on all cars further includes a Hershey coincidental lock, a cigar lighter, vanity cases, front and rear bumpers, assist cords, draw shades, robe rails, foot rests, etc. Garnish moldings are of genuine walnut.

Trunks are furnished with the 133-in. wheelbase town sedan and sport touring.

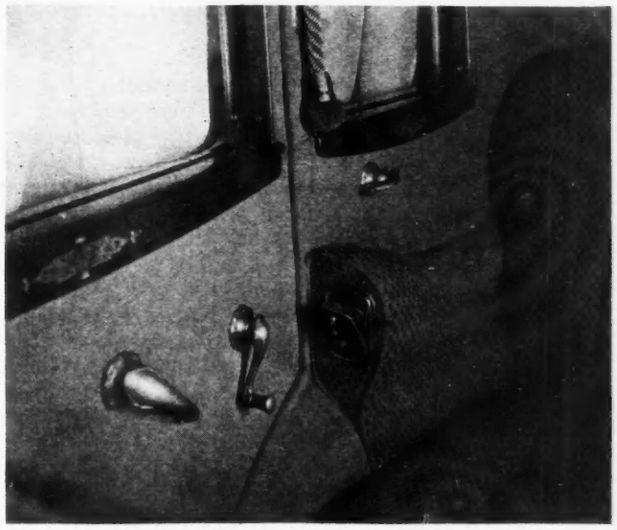
Marmon Showing New Models

MARMON is exhibiting at the New York Show two new body models, a touring speedster and a collapsible coupe. The speedster was announced a short time ago but has just been put in production. Refinements have been made in the interiors of the older models.

Adjustable front seats have been incorporated in the Series 78 speedster and sedan. A large thumb screw is provided at the base of the seat to move the entire front unit backward or forward to any position desired.

New type arm rests of molded sponge rubber also have been added on the 78 sedan. They are unusually large and are curved at the base in such a manner as not to interfere with the roominess of the seat itself. In the ends of the arm rests are built-in ash receivers which are moved into position for use by pulling a small knob in the metal panel at the end of the rest.

Interiors of the 78 line are improved by a new robe rail, toggle assists and vanity case, all of which are mounted in a pleasing ensemble at the rear of the front seat. The vanity case in the center is of large design and at each side of it are robe rails of rope rather than of metal. Toggle assists are provided with rust-proof spring cores and mounted at each end of the robe rails rather than on the door pillars.



Interior of Marmon 78 sedan, showing new type arm rest of molded sponge rubber with built-in ash receiver

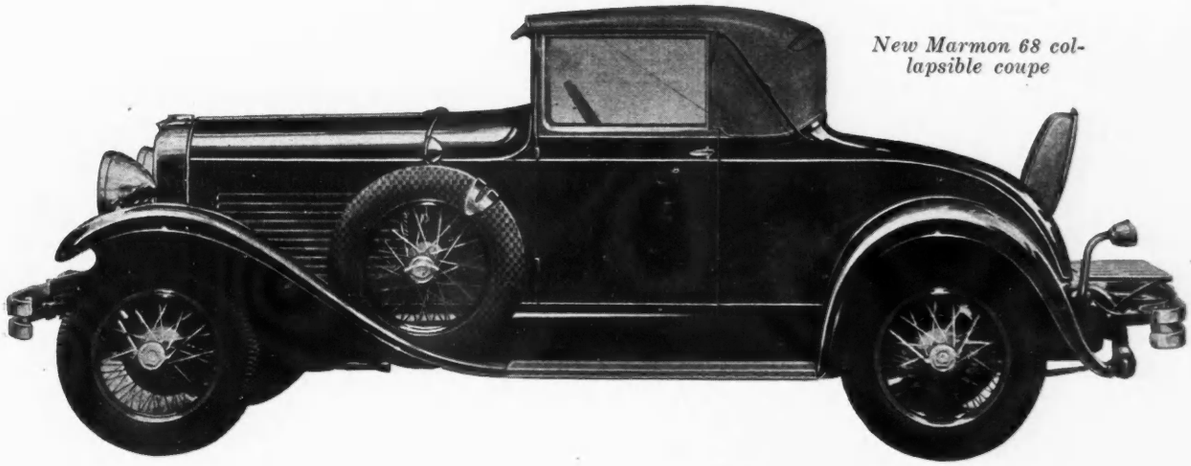
Walnut Wainscoting

Additional interior features of the 78 sedan are the use of Nachman-type spring cushions on both front and rear seats, and genuine walnut wainscoting, not only under the door windows, but under the extreme rear windows on each side.

The new 68 speedster, listing at $1,625, and the 78 speedster at $2,065, both provide for six passengers, three in the rear and three in the front. The streamline effect on both chassis is combined with a canoe-shaped design which is further augmented by low rakish tops that may be folded into a 6-in. boot.

The two new collapsible coupes also are streamlined. Rumble seats are provided and are operated by levers in the driving compartments.

The 68 collapsible coupe lists at $1,565, while the Series 78 coupe sells at $2,065.



New Marmon 68 collapsible coupe

Willys-Knight Puts *Special* 6 in *Lower* Price Class

Car redesigned along lighter lines but same engine power is maintained. Unusual frame rigidity is effected with minimum of parts. New body lines.

FOLLOWING the recent announcement of changes in its Whippet models, the Willys-Overland Co. now has made public certain major changes in two of its Knight-engined cars, the 70A and the 66A. The 70A, now known as the 70B, has been transferred to a lower-price class, although actual prices had not yet been announced at the time of this writing.

As compared with the 70A, the 70B is considerably lighter, and since the same engine power is maintained, the performance is correspondingly better. In order to achieve this lightening, chassis parts and bodies of lighter design are used, but are strengthened in the light of experimental research, so that the new model does not compare unfavorably with the former Special Six, the 70A.

These changes, moreover, have made possible a general standardization of parts, which has resulted in lower production costs and thus made possible the price reduction. Bodies are of a new style, quite similar to those introduced on the Whippet Six, in their general lines, but differently trimmed and with better grades of upholstery.

Heat Control New Feature

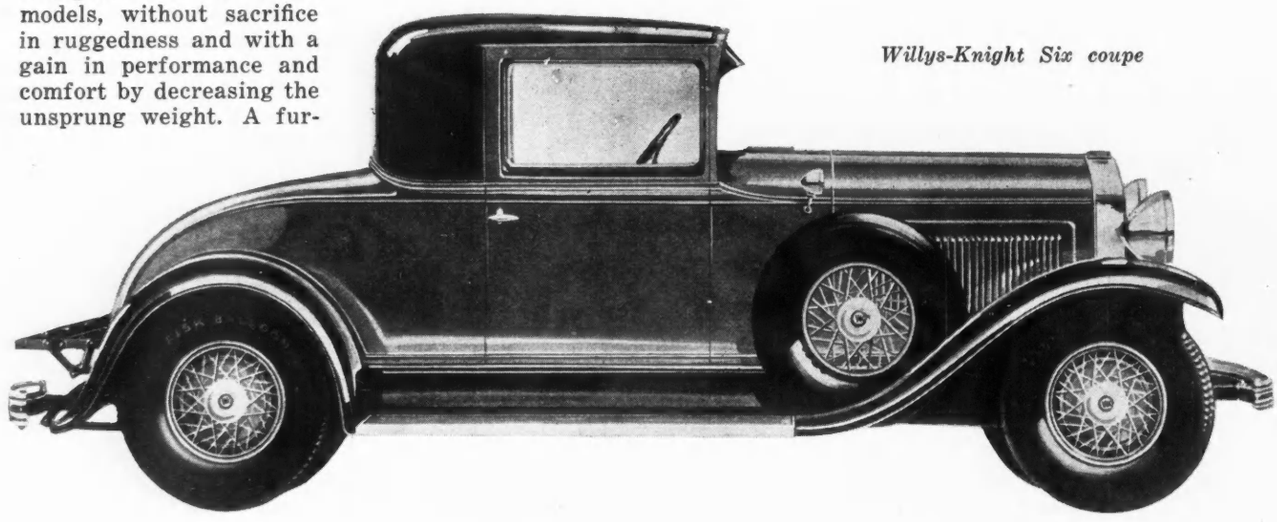
The engine remains practically unchanged, except for the addition of heat control. A Rockford single-plate clutch has been specially designed for Willys productions, and is used in this model as well as in the Whippet Six. It was found that by strengthening the axles of the 1928 Standard Six, a number of parts could be made interchangeable on several models, without sacrifice in ruggedness and with a gain in performance and comfort by decreasing the unsprung weight. A further change in the axle includes a new gear ratio of 4.8 to 1, as compared with 5.11 to 1 last year, which in turn means lower engine speed and higher road speed at maximum horsepower.

Tryon spring shackles and Watson Rubberflow stabilators are used all around. The frame is particularly interesting, owing to the unusual rigidity effected with a minimum of parts. For instance, front and rear cross-members are formed into a box section by turning down the lower flange of the frame side rail and riveting to it the part of the cross-member, which is also riveted to the upper flange and is then turned down. Both of these box type sections are further reinforced by a tubular cross-member at the same points, which at the rear passes right through the box section.

Gusset plates are riveted to the center cross-member and to the lower frame flange. The steering gear is now flange-mounted to the side rails, instead of being trunnion mounted.

Radiators are larger than formerly, being both higher and wider. This change has been made without increasing the core size (presumably by reducing the depth of the core—Editor), thus obtaining better cooling efficiency without requiring an increase in water capacity.

New body features include the "finger tip control" now used on all Willys-Overland cars and described in connection with the Whippet announcement; one-piece crowned fenders, chrome-plated headlamps and



Willys-Knight Six coupe

tie-bar, the lamps being fitted with Glo-lite lenses, and monocontrol windshield operation. The usual instruments are supplemented by a dash gasoline gage, heat indicator and Electrolock.

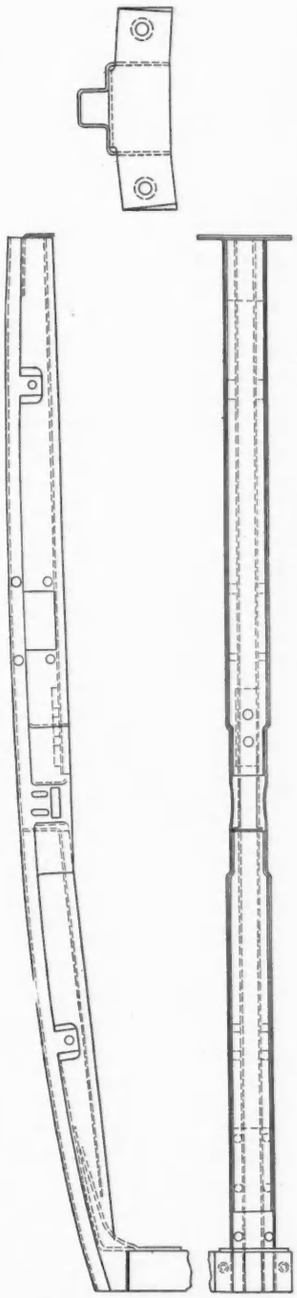
A new body model in the form of a three-window, four-door, five-passenger sedan has been added.

Tires are 5.50-18, the spare being carried in a well in the right front fender, with provision for a lock in the hold-down clamp. The wheelbase is 112½ in., which is ¾ in. less than that of the Special Six of 1928.

Three-shoe Bendix brakes are used at the front, and external band brakes of Willys-Overland manufacture at the rear, these same brakes also having been adopted on the Whippet Six. The total braking area is 243 sq. in.

Bodies for the new Willys-Knight Great Six line are by Amos Northup, originator of the present Hupmobile bodies, and are of unusually attractive form. One of these bodies is illustrated herewith.

Copper tubing has been eliminated from the oil distributor and rectifier lines, their place being taken by passages drilled in the crankcase. The latter is now of cast iron, instead of aluminum alloy as last year. This crankcase, moreover, is longitudinally ribbed for greater resistance to vibratory forces. From the latter angle, the spreading apart of the engine front supports and the removal of the rear supports to the clutch housing are also important.



Door lock pillar on latest Willys-Knight models

Front supports are integral with the aluminum alloy front-end cover, as formerly, and rest in rubber on the front cross-member near the side rails. At the rear the heavy supporting arms form part of the clutch housing and are bolted to the inside of the frame channels, with rubber plates on both sides of the frame side rail. To decrease the angularity of the universal joints, the engine is hung in the chassis at a slight angle. Further changes in the engine include the provision of a heat control valve in the inlet riser, operated from the dash. The engine now develops a maximum of about 75 hp. and a maximum torque of well over 180 lb.-ft.

With the exception of the differential carrier, all rear axle parts, formerly made of malleable castings, are now made of steel. To the outer end of the banjo-type welded axle housing is welded an extension carrying two Timken roller bearings, as well as the brake backing plate. In place of the usual bushing type of spring seat mounting, a spring mounting and spacer is welded directly to the housing. The rear axle reduction is now 4.4 to 1. Wheels of 19 in. diameter carry 6 in. tires.

Front axles also are new, with a heavier center section and plain bearing knuckle pins, except for the roller-type thrust washer. Other front and rear axle bearings are all of Timken manufacture. Brakes are of the three-shoe Bendix type all around, with 15-in. drums, 2 in. wide. The emergency brake lever, which is now mounted on a bracket on the left frame side-rail, is connected through a supplementary linkage to the rear wheel brakes.

"Torque Tube" Reduces Twist

The three pressed-steel brackets which support the brake cross-shaft have a large "torque tube" welded to them, which is intended to reduce the twist of the heavy cross-shaft and thus give a more rigid linkage.

Frames on the 66B are of a new design and unusually rigid. They are "bottle-necked" in shape, with side-rails parallel at both front and rear, but 14½ in. further apart at the rear than at the front. Along both of these sections the lower flange is turned down for greater strength. At the offsets the lower flanges are considerably wider than elsewhere, to increase resistance to bending at these points. There is a similar widening of the flange at the radiator, where it takes the place of a gusset plate.

There is a large tubular cross-member just ahead of the rear engine supports, to offset the loss of rigidity due to using rubber mounting for the engine. The next cross-member to the rear is of channel shape, but of double section, riveted together at the center, but spread apart at the ends, so as to permit riveting to both flanges of the side-rail. The cross-member which carries the two front supports of the flat 18-gal. gas tank is a Z-bar. Another tubular member is found at the extreme rear, and there is also one at the front, these being fastened to the same malleable brackets which also carry the spring shackle pins and bumper brackets.

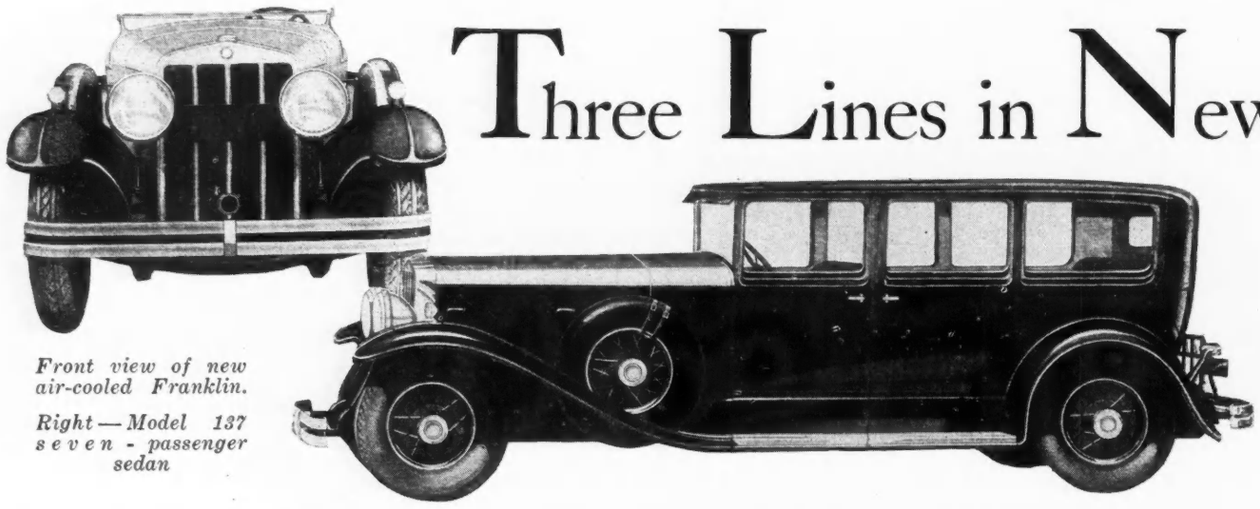
Although the wheelbase of the new car is only 120 in., springs have not been appreciably shortened, being 39 in. long at the front and 57 in. at the rear. The steering gear is of the Ross variable ratio cam-and-lever type. The chassis lubrication system, which includes fittings for the water pump, steering mechanism, and brake levers, is of the one-shot type.

The exhaust system has been changed somewhat, the muffler now being supported directly from the double channel member in the center and the piping straightened out to decrease back pressure.

A number of improvements have been made also in body construction. Removal of the gear shift lever from the transmission housing to the clutch housing makes the driver's seat more accessible. Steel insert rubber pads surround all pedal controls.

Included in the standard equipment are trunk racks, Watson stabilators, Electrolock, automatic windshield wiper, rear-view mirror, combination tail and stop-light and separate backing-up light. Three body types, all of Baker-Raulang make, are contemplated for production at present, a five-passenger, four-door sedan, a six-passenger coupe (which is in effect a close-coupled sedan with exceptionally wide doors), and a rumble-seat roadster.

Three Lines in New



Front view of new air-cooled Franklin.

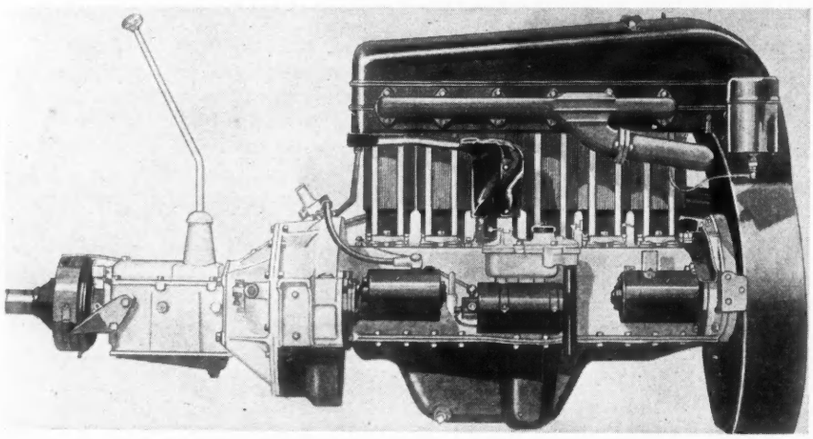
Right — Model 137 seven-passenger sedan

Two additional models introduced for 1929 are larger than last year's offering. Prices changed.

By P. M. Heldt

INSTEAD of a single line as in the past, the H. H. Franklin Mfg. Co. now offers the public through its dealers three distinct lines of air-cooled cars, at different price levels. The smallest and lowest-priced line, the 130, carries an engine of the same piston displacement (236 cu. in.) as last year's Franklin, and has a wheelbase 1 in. longer (120 in.). The other two lines, the 135 and 137, are both equipped with an engine having a displacement of 274 cu. in., having a ¼ in. larger bore but the same length of stroke as the 130. The principal difference between these two lines relates to the wheelbase, which is 125 in. on the 135 and 132 in. on the 137.

The 130 chassis is powered with a six-cylinder Franklin air-cooled engine of 3¼-in. bore and 4¾-in. stroke. The general construction of the engine and the cooling system are the same as in other Franklin models of the past several years. An improvement has been made in the method of lubricating the valve rocker arms. Since the cylinders of the Franklin engine are separately cast, the rocker arms for each cylinder have their own housing, and the bearings of the rocker arms receive their lubricant from a felt pad located inside the housing above the rockers. In the past it has been necessary to saturate the pads at intervals, and the need for this is now obviated by the installation of a special automatic valve rocker oiler.



Improved Franklin air-cooled engine, showing new automatic valve oiler tank

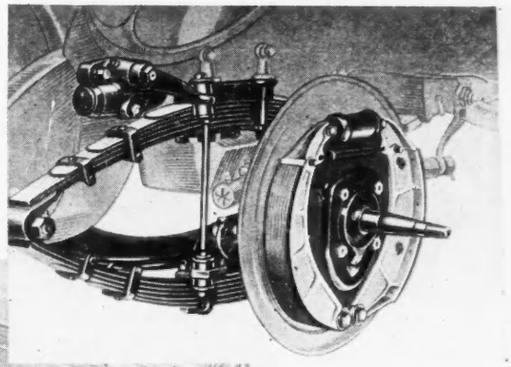
WITH the introduction of the new lines, sweeping price revisions have been made by Franklin. Prices start at $2,160 and extend up close to $3,000. The new lines with prices of individual models are as follows:

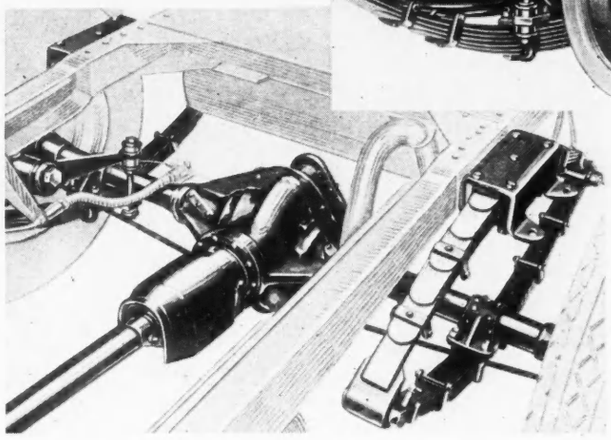
Model	130	135	137
Sedan	$2,180	$2,485	$2,775
Coupe	2,160	2,510	....
Conv. coupe	....	2,610	....
Victoria brougham	....	2,595	....
Sport sedan	....	2,625	....
Limousine	....	....	2,970
Sport touring	....	....	2,785
Seven-pass. touring	....	....	2,870
Sport runabout	....	....	2,785

This comprises the working mechanism of an Alemite chassis lubricating system, consisting of a delicately pivoted spring-supported weight in an oil tank mounted alongside of the fan housing. When the car is in motion the weight vibrates continuously. This up-and-down motion is converted through a ratchet mechanism into rotary motion of a shaft carrying a spiral cam, and the latter actuates an oil pump, to which it imparts one stroke per revolution. A tube leads from the oil reservoir to all of the valve rocker housings, and the felt pads are kept constantly saturated with oil. The reservoir has a capacity of slightly more than a quart, and must be refilled with a light oil once every 1800 to 2000 miles of travel.

An AC fuel pump is used, and is actuated from an eccentric on the camshaft in the usual manner. Steel-backed babbitt-lined main bearings are now used in the engine. The connecting rods are duralumin forgings and

Franklin Set-up





Above — View showing hydraulic brake and full elliptic spring. Left— Close-up of rear axle and differential housing

have the babbitt cast in the big ends. The piston is of the aluminum-alloy slotted-skirt type, and the engine is designed with a compression ratio of 4.78 to 1.

The As-Ke Fuemer is now standard equipment on this model. This consists of a wad of asbestos wicking located in the lowest part of the carburetor, which is heated by means of electric current flowing through an electric coil incorporated in it, as long as the starter current is on.

An important feature of the new model is that all of the devices formerly mounted on the forward side of the dash have been removed therefrom, thus eliminating the possibility of noises inside the body from this source. The vacuum tank has been replaced by the fuel pump, and the Purolator oil filter is now mounted on the side of the engine in line with the starter. This change also shortened connections and made for cleaner design. One of the pieces of equipment is a hydrostatic oil gage, which is mounted on the instrument board and indicates the amount of oil in the crankcase. In addition there is the usual bayonet type of gage directly in the crankcase.

The Delco-Remy ignition system is now used. This incorporates automatic spark advance, but there is a spark retarding button on the dash for use if it should be found convenient for any reason to set the spark later than the automatic control will set it. The starting and lighting system is also of Delco-Remy make, and is used in connection with a 120 amp.-hr. storage battery. Engine lubrication is by pressure to all main and connecting rod bearings, but the system differs from the usual pressure system in that a distributor is used, the oil delivered by the gear pump being passed to the different bearings in succession, through a distributor incorporated with the pump, so that each bearing receives a predetermined share of the total amount of oil delivered.

Torsional vibration is guarded against in the Franklin engine by the use of a flexible center in the blower at the front of the engine. In case of incipient torsional vibration, this flexible member will be slightly distorted torsionally, and its internal friction will damp out the vibrations.

The clutch is a 10-in. Brown-Lipe with flexible center, and the transmission a conventional three-speed design, made by the Detroit Gear & Machine Co. From the transmission the power is carried through a tubular propeller shaft with Spicer metal universal joints to the rear axle. This is of the familiar Franklin design with cast-aluminum center housing and tubular axle housings. The drive is through spiral bevel gears and the axle is fitted with Timken roller bearings throughout.

On the 130 the Ross cam-and-lever steering gear is used, with a reduction of 15.6 to 1. The front axle is tubular, in accordance with established Franklin practice. Another feature which marks a continuance of a long-established Franklin practice is the use of full-elliptic springs all around. The front springs measure 36 by 1¾ in. and the rear springs, 38 by 1¾ in. Wahl two-way hydraulic shock absorbers are fitted at both front and rear.

Four-wheel Lockheed hydraulic brakes of the internal type and 14 in. in diameter are fitted, and the system comprises the self-compensating master cylinder. A hand-operated emergency brake operates on a drum at the rear of the transmission. While in previous Franklin models the brake lever was located at the left of the driver's seat, to be operated by his left hand, on the 130 it is in the center of the front compartment.

Pressed Steel Frame

A pressed steel frame is now used, with a channel section 6½ in. deep at the center, with 2-in. flanges and made of ⅛ in. stock. It is a double-drop frame, there being a 3-in. drop in the side channel at the dash and a slightly smaller drop at the rear. The 20-gal. gasoline tank is carried at the rear, and the amount of fuel in it is indicated by an electric-type of dash gage made by the National Gage & Equipment Co.

The 135 and 137 are fitted with a six-cylinder engine of 3½-in. bore and 4¾-in. stroke, with a 4.73 to 1 compression ratio. As is the other Franklin engine, the cylinders are cast of nickel iron containing about 2 per cent of nickel, which makes a strong and hard casting. This engine is fitted with invar strut pistons and with drop-forged duralumin connecting rods, the latter measuring 9½ in. between centers, which is exactly twice the stroke.

The engine has a fully counterbalanced, case-hardened crankshaft, carried in seven main bearings of the steel-backed babbitt-lined type. Crankpin bearings are 2⅛ in. in diameter and 1 27/64 in. in length. All main bearings are 1⅜ in. in diameter, the lengths being 2 11/32 in. for the front, 1 5/16 in. for the five intermediate, and 2 11/32 in. for the rear bearing. As in the smaller Franklin engine, torsional vibration is damped out by the flexible center in the runner of the blower.

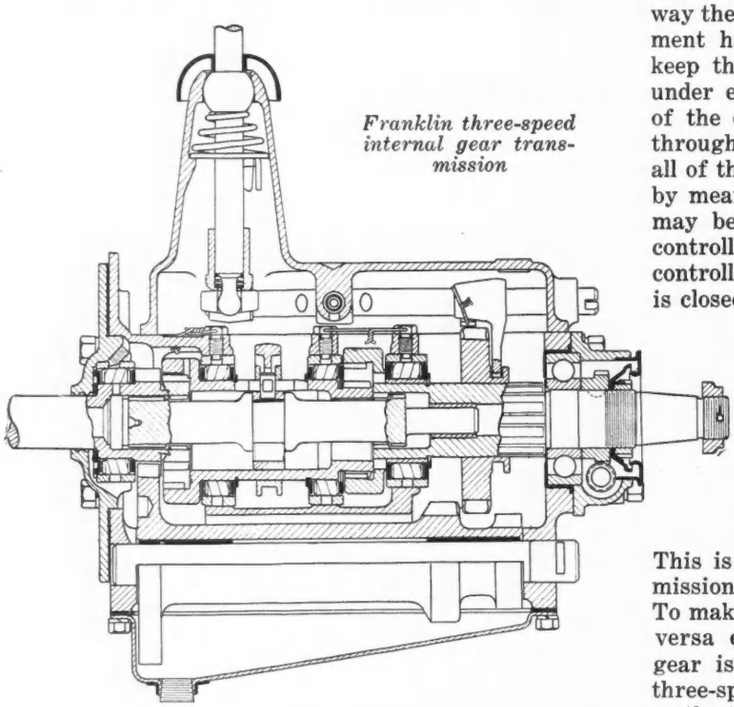
Crankcase and flywheel housing are an aluminum

casting, while the oil well is of pressed steel. The engine is supported on the pressed steel frame by what is practically equivalent to a three-point mounting. At the forward end there is an angle-shaped pressed steel engine bearer which is fastened to the top of the crankcase by two bolts located fairly close together, while at the rear, supporting arms are cast on the flywheel housing which rests on brackets secured to the frame side-rails.

Engine Details

Intake valves are made of chrome-vanadium steel; exhaust valves of silchrome. Both have a clear diameter of 1 7/16 in., but the lifts are different, that of the inlets being 5/16 and that of the exhausts, 9/32 in. The camshaft, which is mounted in bearings of die-cast aluminum, is driven from the crankshaft through a silent chain, which also drives the generator. This chain has a ½-in. pitch and is 1¼ in. wide. It is adjusted by swinging the generator around one of its three mounting bolts. Valves are operated by mushroom-type cams and followers, through tubular pushrods with hardened inserts at the ends, these pushrods extending up through tubular housings at the side of the engine. The valve timing is rather unusual. Inlet valves open in upper dead center and close 57 deg. past bottom dead center, while exhaust valves open 43 deg. ahead of bottom dead center and close 25 deg. past top dead center.

Fuel is carried in a 20-gal. rear-mounted tank fitted with a hydrostatic gage, with indicator on the dash. It is delivered by an AC pump, driven in the usual manner, to the Stromberg 1¼-in. carburetor fitted with As-Ke Fuemer, the action of which was explained in connection with the 130 engine. On these models the Fuemer is controlled by a dash switch, instead of by the starter button. The inlet manifold is of the Swan square-section type, with one inlet and three outlets, inlet ports of adjacent cylinders being connected by flanged fittings which also connect to the manifold.



Franklin three-speed internal gear transmission

Ignition is by Delco-Remy coil and distributor system with full automatic advance. The coil is mounted on the dash and is provided with a lock switch. A spark-retard button on the dash permits of a certain degree of manual control of the spark, which, however, is not intended for regular use in driving.

Starting and lighting systems also are Delco-Remy, and a 135 amp.-hr. battery is carried on these models.

Engine lubrication is by the full pressure system. The gear pump, which is larger than on the 130, is mounted in a pocket in the oil well and is driven from the camshaft through helical gears and a vertical shaft. It delivers oil through a distributor with nine outlets, seven of these being connected up to the main bearings of the engine and two leading to the chain compartment and the Purolator, respectively. Thus the Purolator is not in circuit with the bearings, but constantly receives a definite fraction of the oil delivered by the pump. The valve rockers are automatically oiled in the same way as described in connection with the 130.

The Franklin crankcase ventilating system, by which a small fraction of the air delivered by the blower is tapped to the crankcase, is retained. The branch from the air duct to the crankcase, with thermostatic valve shutting off the communication in warm weather, is located forward at the right-hand side of the engine. The outlet from the crankcase has been modified somewhat, however, and moved farther forward. It is combined with the oil filler, but the discharge of gases from the crankcase is through a tube extending through the sod pan, so as to keep the interior of the engine compartment clean.

The New Larger Engine

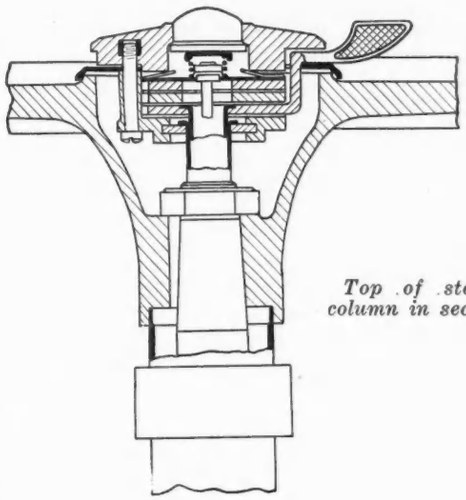
While fins on the new engine are deeper, longer and more numerous than on the smaller engine, in a general way the cooling system remains the same. One improvement has been made, however, which is designed to keep the engine at more nearly constant temperature under extremes of atmospheric conditions. The front of the engine space on the Franklin cars has a grille through which the air for engine cooling enters. In all of the new lines there is a shutter behind this grille, by means of which the admission of air to the blower may be controlled. In the 130 this shutter is hand-controlled, while in the 135 and 137 it is automatically controlled by a thermostat. In these latter the shutter is closed when the engine is not running. The thermostat, which is of the Sylphon bellows type, is located at the side of the engine, where the air leaving the cylinder jackets passes over it. When the engine is started, this air soon becomes heated, and the shutter is then opened.

The clutch is a Brown-Lipe 12-in. single-plate type with flexible center. A Warner Gear Co. three-speed transmission with internal-geared intermediate speed is fitted. This is similar to the Warner four-speed Hiflex transmission, except that the emergency low speed is omitted. To make the shift from high into intermediate and vice versa easy, the reduction ratio of the intermediate gear is made considerably smaller than ordinarily in three-speed gears, viz.: 1.42 to 1, which is the same as the third-speed ratio in the Warner four-speed transmission. The low speed reduction ratio is 3.12 to 1. The transmission has a cast-iron case and the shift is conventional. Speeds as high as 50 m.p.h. are said to be obtainable in intermediate gear.

Drive to the rear axle is through a Spicer propeller shaft and two Spicer metal universal joints. Three rear axle ratios are offered, viz.: 4.54, 4.73 and 5.10, and while each ratio can be had on each of the three lines,

the 4.53 ratio is standard on the 130 and 135 and the 4.73 ratio is standard on the 137, while the highest ratio is available for use in extremely hilly country.

The rear axle is the same semi-floating type as used on the 130, with cast-aluminum center housing and chrome-molybdenum steel axle tubes. The differential



Top of steering column in section

with its driving gear can be removed through the back of the center housing, while the bevel pinion is mounted directly in the housing. All bearings in the rear axle are Timken roller bearings. The front axle is tubular, the tube also being of chrome-molybdenum steel and having the steering heads riveted to it. Front wheels also run on Timken bearings.

The 135 and 137 have pressed steel frames with 6½ by 2 by ⅛ in. side channels. In the design of this frame flexibility was aimed at, the same as formerly obtained with the Franklin wood-sill frame. There is one channel-section cross-member directly behind the rear axle which is suitably gusseted, together with a cover plate over the fuel tank. There are two light channel-section cross-members at the middle of the chassis. The engine is supported by stamped brackets at the rear and an angle-section pressing at the front, and in addition there is a heavy apron at the front to prevent the side rails from twisting.

Braking Equipment

Steering is by a gear of the Franklin company's own design, of the worm and sector type, with a reduction ratio of 16.9 to 1. Lockheed hydraulic four-wheel brakes with compensating master cylinder are fitted. These act on drums 14 in. in diameter by 1¾ in. wide. Molded brake lining is used. The parking brake acts on a drum at the rear of the transmission and is 8 in. in diameter by 2 in. wide. On these two lines the parking brake lever is located at the left.

Full elliptic springs are fitted all around, 36 by 1¾ in. front and 38 by 1¾ in. rear. Wahl two-way hydraulic shock absorbers are standard equipment at both front and rear. Wheels are of the artillery type, with 12 spokes. Tire equipment on the three lines is as follows:

130—19 by 6 in. four-ply.
135—19 by 6.50 in. four-ply.
137—19 by 6.50 in. six-ply.

Numerous improvements have been made in the bodies, more particularly with respect to greater roominess and increased luxury. The roof line is 1 in. lower than heretofore, the belt has been raised, and—owing to the longer wheelbases used—the bodies are longer. Treads on all models are now 58 in. at both front and rear, and this has made it possible to add 1½ in. to the widths of the seats.

Body frames are substantially braced and many of the joints between the wood frame members and metal braces have graphite-paper inserts, designed to prevent squeaks. Bodies rest on four brackets secured to the frame, instead of directly on the frame. A broadening of the step panels of the window reveals and the use of a larger radius at the corners accentuate the height of the body sides and the lowness of the roof line.

Body Improvements

Front corner pillars are no wider than the distance between the pupils of the driver's eyes, which gives increased vision. The front doors now hinge on the front and the rear doors on the rear pillars. On the two larger models the hood side panel is relieved by vertical louvres—two located well forward and the third just ahead of the cowl. The hood grille now is paneled by vertical mullions which extend farther down and give the effect of a higher, narrower front. The circle which has characterized the Franklin grille in the past has been very much reduced in size, to a mere escutcheon for the starting crank. The grille cap is now made larger in diameter and lower.

A new motif appears in the Airwing fenders, which have a wide sweep from the frame outward and to the rear. These are provided with a rolled beading near the edge, which extends around the fender tip and up the center of the crown. This same beading continues along the running board binding, which is of polished aluminum in the 130 and of chromium-plated non-ferrous metal in the other two models. Fenders and running boards are about 1½ in. wider than previously used by Franklin.

The predominant material for interior trimmings is Australian wool broadcloth, the upholstery being of the plain or non-tufted type. Nonshatterable glass is used for limousine partitions and for windshields in all models. The window at the driver's left can be raised and lowered by a single turn of the "Once-Over" regulator. Other interior hardware of the 135 and 137 models is of the new Heppelwhite pattern. Instrument panels are of engraved silver and are indirectly illuminated.

All cars are equipped with bumpers at front and rear and all have rear view mirrors. In all closed models there is a vanity case on one side and a smoking set on the other, while a cigar lighter is mounted on the dash. All cars have vacuum-type windshield wipers, sun visors and dash gas and oil gages, North East speedometers, mudguard parking lights, gasoline filters and air cleaners.

Ryan Headlamp Fitted

The two larger models carry certain items of equipment not found on the 130. Reference has been made already to the fact that the grille shutters are automatic on the 135 and 137 but hand-operated on the 130. Ilco Ryan headlamps are fitted on the 135 and 137. These are large diameter bullet-type lamps and are controlled by a dimmer switch on the toe-board. These two models also have combined tail, stop and back-up lights, while the 130 has combined stop and tail-lights. All models of the 137 line are equipped with folding trunk racks and automatic running board lights, while all models carry dash clocks. All outside bright parts of all models are chromium-plated.

Just Among Ourselves

Closer Than Usual in Our Predictions

AT the beginning of each year it has been our none-too-enviable function to have to predict motor vehicle output for the forthcoming 12 months. As a predictor we claim just one distinction: It has been our invariable practice to check up publicly at the end of each year on the predictions which we made 12 months previously. Sometimes that checking process hasn't been so good for our reputation as a prophet but invariably it has helped us in that never-ending battle to keep ourselves honest. This year, however, the checking up for once doesn't make us look too foolish. We have cause to feel reasonably satisfied with our passenger car guess, although as regards our truck production estimate we have to wear sack cloth and sprinkle ourselves with ashes as usual. But here are the results anyhow.

* * *

Truck Production Exceeded Expectations

AT the beginning of 1928 we predicted a passenger car output of about 3,900,000 and a truck output of about 500,000, or a total motor vehicle production of about 4,400,000. Our passenger car guess was pretty good—it was low—between 3 and 4 per cent, as a matter of fact. We did fail to gage correctly the rapidity with which trucks went forward; our truck guess was awry by nearly 18 per cent. The total output of cars and trucks for the year turned out to be around 4,650,000 as opposed to our guess of 4,400,000, making us wrong by 250,000 vehicles. If output had been kept in line with sales, however, and car and truck dealer stocks had not been increased by some 150,000 vehicles, we wouldn't have been nearly so far out of the way. Nevertheless we w e r e, and that's that. Incidentally, we take this opportunity to make our annual offer to act as Father Confessor to any other automotive guessers who have the temerity to check up their January, 1928, statements in the light of December, 1928, actual returns.

* * *

Advertising Advancing on Scientific Basis

I PREDICT that 10 years from now," says Allan Brown, Bakelite's advertising manager, "the information we have today on advertising mediums and markets will seem like the information of a primer in the first class in elementary advertising." Mr. Brown may or may not be right in the time element involved in his estimate; he certainly is right as regards his basic conception. Less blue sky is going to be bought and sold in the advertising field every year from now on.

* * *

Looking Back on a Merry Xmas

SOME South Bend iconoclast has just written to say that now is the season for bad cigars, dud lighters, desk pads, ash trays, paper cutters, fruit cakes and sides of bacon and to suggest that something should be said about this foolishness in these columns. We regret being unable to Menckenize much along these lines at the moment, since we had pretty good breaks this year ourself and are feeling sort of mellow in the afterglow of a pleasant Christmas — and New Year's bills aren't anything to worry about, of course, in these days of a dollar down and an eon to pay. We were delighted, for instance, with a really beautiful bit of machinery photography sent to us attractively framed by the Oldsmobile company; it adds much to the appearance of our office. We had real pleasure in burning in our window on Christmas Eve the big red candle Ternstedt presented us with; and we nearly rolled out of the editorial chair reading a burlesque C h r i s t m a s greeting sent to our coworker on *Commercial Car Journal*, A W. Brownell, by A. M. Corrigan, who has handled the advertising end of the truck division of Dodge Bros. for some while back.

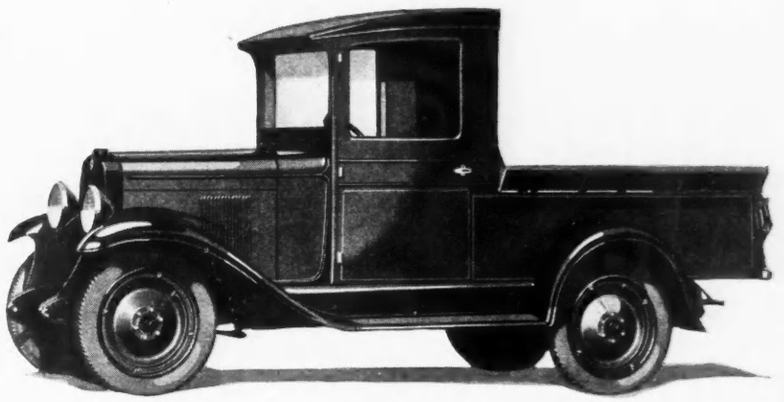
* * *

Useless Gift Situation Apparently Improving

WE got the usual flock of Christmas cards, to be sure, but we seemed to feel an honest expression of friendliness and fellowship glowing through a large proportion of them. There seemed to be a greater proportion of straightforward greetings than ever before and a smaller minority of Babbittized fuzz sticking around the edges. A few useless whatnots found their way to our desk, to be sure, but certainly we are no one to criticise; the originality shown in the choice of the whatnots surely was as great as that exhibited in our own choice of articles and treatment in the magazine. No —maybe we're getting old—but the useless gift situation seems to us to be improving rather than getting worse; besides we are crabbed enough in general, so don't like prodding ourselves to be so on the few occasions when we feel reasonably relaxed to begin with.—N.G.S.

Chevrolet Truck Rating Increased and Wheelbase *Lengthened*

Frame is now longer and heavier and rear axle is stronger. Disk wheels standard. Clutch improved by change in composition of throw-out bearing. Cab is new.



ASIDE from the adoption of six-cylinder engines, previously mentioned in these columns, a number of other changes have been made in the Chevrolet line of trucks, which considerably increase their utility and possible market.

In the first place, the rating of the utility truck has been increased from 1 to 1½ tons, and both the loading space and the strength of the carrying units have been increased. The wheelbase has been lengthened 7 in. and is now 131 in. Lengthening it has increased the permissible body length back of the cab by 3¾ in. to 108 in. The frame is longer and heavier, all of its cross-members having been strengthened and the side rail flanges widened ½ in.

The rear axle has been strengthened throughout, and its reduction ratio, in consequence of the increased power available, has been lowered from 5.33 to 4.88. Disk wheels are now standard, but they carry the same tire size as formerly, which is said to be ample for 1½-ton loads. A change in the composition of the throw-out bearing has improved the clutch; the four-speed transmission with provision for a power take-off is retained, but the propeller shaft has been lengthened as required by the longer wheelbase.

Heavier brake drums were adopted last July, and a change has now been made to a brake lining which is more immune to weather influences.

High Road Speed Sustained

Carrying a full 1½-ton load the new truck is said to be capable of continued road speed of 50 m.p.h.

As far as the bodies are concerned, Chevrolet continues its former policy of supplying the chassis with cabs only, bodies being supplied by various commercial body manufacturers throughout the country. The new cab on the Utility truck is decidedly more attractive, being set off by the provision of a cowl with integral instrument panel on all models, a deviation from former practice. Other new features include double filament headlights, full-crowned fenders, a larger radiator, steel running boards with vulcanized rubber mats, and a new type instrument panel carrying an Electrolock and a heat indicator in addition to the usual instruments.

Chassis equipment also includes a channel-steel cross-member type of front bumper, a tail stoplight, a foot-operated switch for the depressible headlight beam, and Alemite lubrication fittings.

Following are body mounting dimensions:

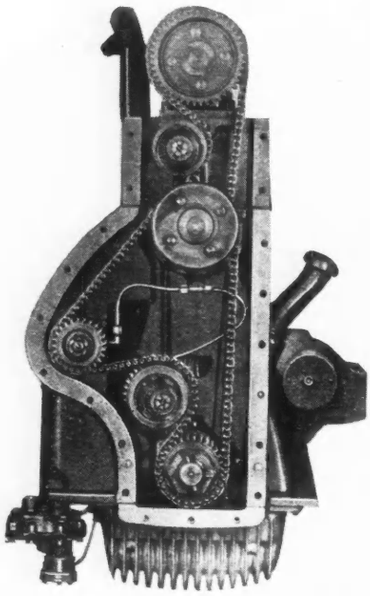
Front of dash to center line of axle	101 13/16 in.
Back of cab to center line of axle	51¾ in.
Back of cab to end of frame	86⅝ in.
Tread	56 in.
Overall length	187⅝ in.
Max. body width between fenders	45⅞ in.
Max. load. space back of cab (two-unit body)	108 in.
Max. load. space back of cab (one-unit body)	116 in.
Chassis shipping weight	2350 lb.
Chassis and cab shipping weight	2680 lb.
Total gross allowable weight including body and load	7000 lb.
Price of chassis without cab	$545
Price of chassis with cab	$640

The light delivery unit is based on the passenger car chassis, as heretofore. In addition to the chassis, which sells at $400 on this unit, a complete car with sedan delivery body, listing at $595 and designed on passenger car coach lines, with rear side windows blanked out and rear door added, is offered.

SEIZURE of the steering gear has been discovered to have been the cause of the accident at Monza last September when Materassi's Talbot ran off the track and killed 20 spectators. Immediately after the disaster, which was the most serious ever known in the history of European racing, the report was circulated by a number of drivers that Foresti, an Italian race driver, had obstructed Materassi and it was owing to a collision between the two cars that Materassi lost control and ran off the track. The official inquiry proved that this was entirely untrue.

6-8 Cylinder "Blackhawk" New

Will be offered in 10 body styles on 127½-in. wheelbase with prices starting at $2,345. Fitted with four-speed transmission and "No-back" device.



Exposed front end view of Blackhawk engine

As a companion to its line of large eights, the Stutz Motor Car Co. of America, Inc., is introducing at the New York and Chicago automobile shows a new line, known as the Blackhawk, and offered either as a six or an eight at the customer's option. The base price on the new car is $2,345.

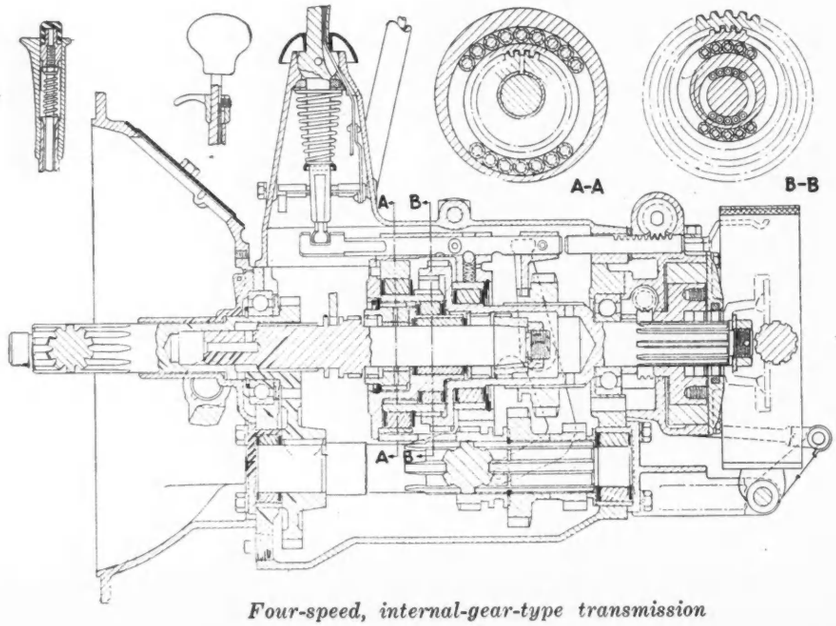
The Blackhawk is built on a wheelbase of 127½ in. and is presented at this time in 10 body styles. The six-cylinder engine is a Stutz, with the same bore and stroke as the Stutz eight, with which many parts are interchangeable. The eight-cylinder engine is a Blackhawk-Continental, Model 16-S, with the same bore and stroke as the 15-S Continental but including several new features.

Improvements in the Stutz eight include a four-speed transmission with two silent gears, a B-K vacuum booster brake with new linkage and new heat-dissipating drums, and a "no-back" developed by Stutz engineers in connection with the Detroit Gear & Machine Co., which prevents backward motion of the car except when the gears are in the reverse position.

The Blackhawk is of even lower appearance than the Stutz but in general lines and contour it bears a close resemblance to its larger brother. The hood is only slightly shorter. A sun dial radiator cap is fitted.

As in the Stutz, the Blackhawk features the four-speed transmission and the "no-back." The third speed —normally the second, as the low is locked out by a finger catch—gives an acceleration of 5 to 25 m.p.h. in 5 seconds, and a top speed of approximately 65 m.p.h. Top speed in high gear is approximately 80 m.p.h. The third speed, which is through internal gears, is designed for traffic use where very quick acceleration is demanded. Shifting from fourth to third is accomplished without difficulty even at the highest speed.

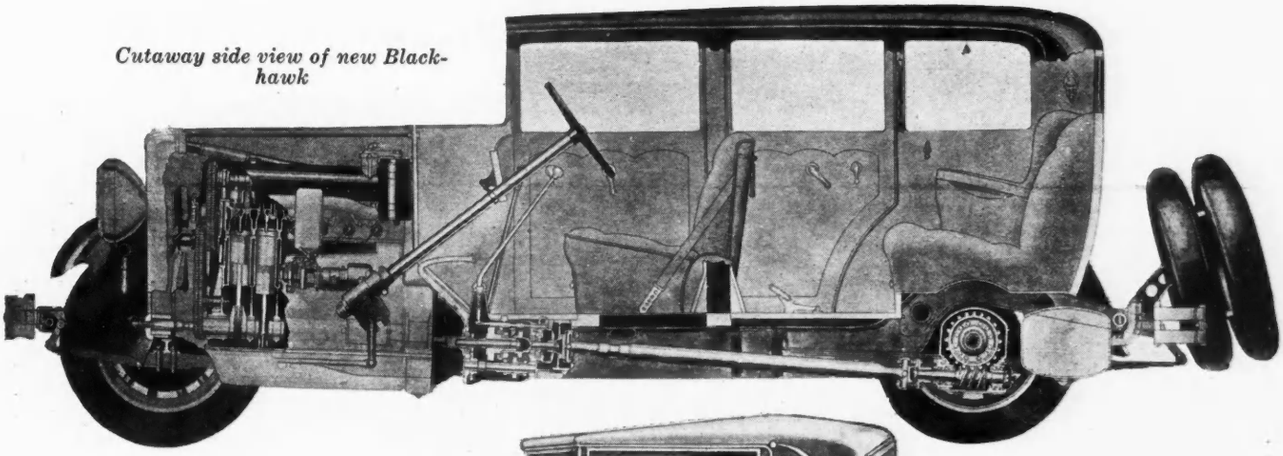
The "no-back" feature is expected to be particularly acceptable to women drivers, and for use in hilly sections. It was designed to eliminate strain on the driver when forced to make traffic stops where there is any degree of incline which ordinarily makes it necessary to keep the foot on the brake pedal. A drum is splined to the main transmission shaft between the transmission and the first universal joint, and surrounded by a housing. It rests against a roller which in turn operates against an L-shaped wedge. When the main shaft is reversed, the roller is pushed against the thick side of the wedge, and backward movement is stopped immediately. When the shifter bar is pushed back to place the gear in reverse, a release is operated by the bar, turning over a cam and dropping the wedge out of position. The car must then be moved forward in gear before the "no-back" becomes operative once more.



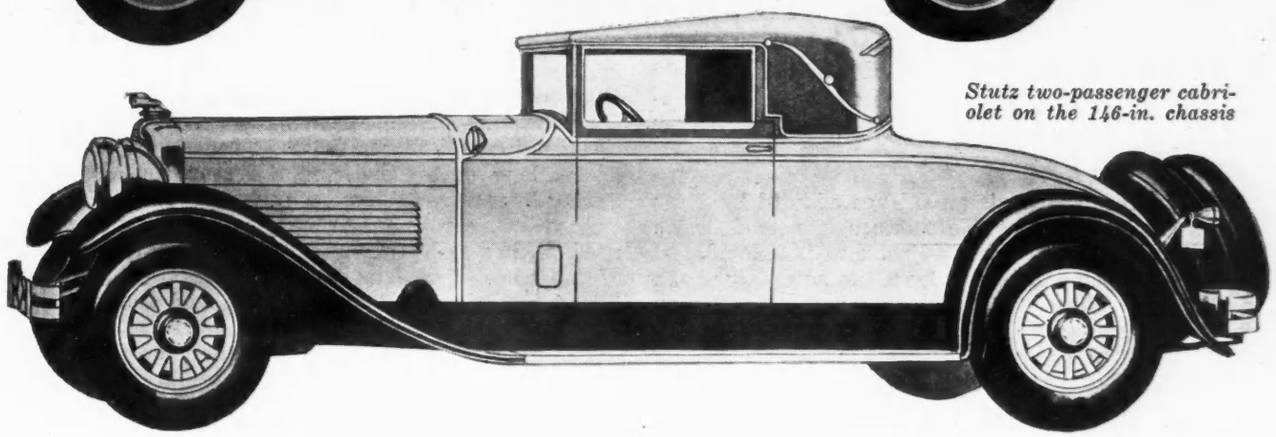
Four-speed, internal-gear-type transmission

As indicated previously, the Blackhawk six engine has the same bore and stroke as the Stutz, and uses the same pistons, connecting rods, front drive chain, camshaft bearings, main bearings and valves. However, the bore of the Stutz has been increased ⅛ in. over the 1928 models, making the bore and stroke now 3⅜ by 4½ in. and giving a piston displacement of 322 cu. in. in the Stutz and 241.5 in the Blackhawk.

Car Introduced *by* Stutz Co.



Cutaway side view of new Blackhawk



Stutz two-passenger cabriolet on the 146-in. chassis

The front main bearing has been increased in length from 3 11/32 in. to 3 17/32 in. and the valve diameters have been increased to 1 21/32 in. Both intake and exhaust valves now are of silchrome steel, and the valve pistons incorporate an oil ring about the center of their length for lubrication purposes. The same overhead camshaft design is continued in the Stutz and featured in the Blackhawk.

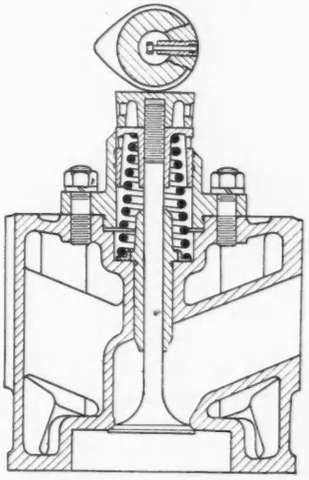
Both the Stutz eight and the Blackhawk six engine now come with a standard compression ratio of 5¼ to 1, as compared with 5 to 1 last year, and the ratio will be made 5½ to 1 at the option of the customer. Still higher compression ratios are available for high altitudes and for use with special fuel.

The brake horsepower of the Stutz is 115 at 3600 r.p.m. and of the Blackhawk six 85 at 3200 r.p.m. The length of pistons has been increased 5/64 in. in the 1929 models, and the length of the standard piston now is 4 17/64 in. Bohnalite pistons are continued, and steel rods of the same length and weight as in the 1928 Stutz.

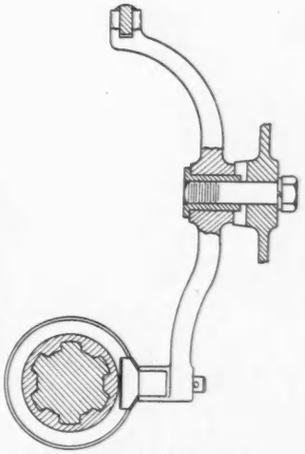
The Blackhawk engine has four-point mounting instead of the three-point mounting of the Stutz. The crankshaft is completely machined and mounted in seven main bearings, the front of which takes the thrust. Front end drive is by Link-Belt silent chains with automatic take-up.

As in the Stutz, silchrome steel is used for both intake and exhaust valves, which are the same size and interchangeable with the Stutz. Full pressure lubrication is supplied to all main bearings, connecting rods, piston pins and camshaft bearings, with positive lubrication to the front drive chains and gears.

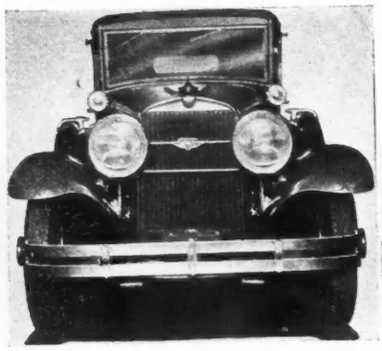
The oil pump develops 30 lb. of pressure at 30 m.p.h., the relief valve opening at 50 lb. A Wall oil filter is

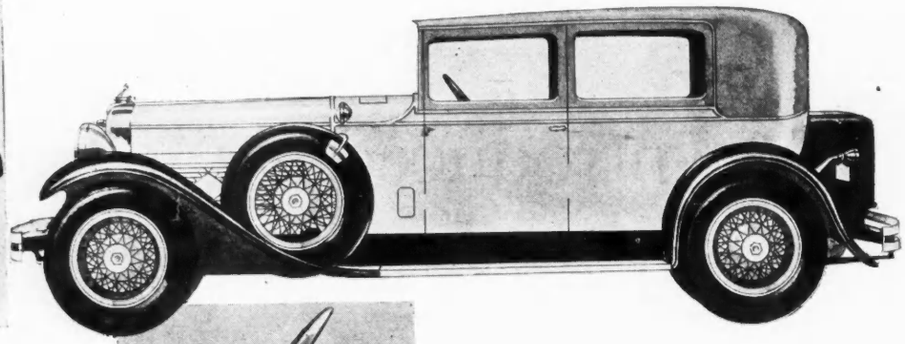


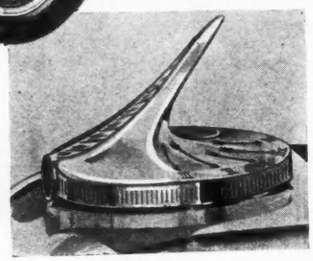
Overhead direct-actuated valve



Emergency low gear rocker arm







Front and side views of Blackhawk. The side view is of the Weymann Monaco five-passenger coupe with trunk. Below—Sun dial radiator cap as used on the new Blackhawk

fitted. Chassis lubrication is by the Bijur system. The engine oil reservoir has a capacity of 9 qt.

The fuel and manifolding systems of the new Blackhawk six are something of an innovation, incorporating a dual manifold and dual carburetor. One manifold feeds cylinders 1, 2 and 3, and the second feeds cylinders 4, 5 and 6. A Zenith duplex, 1¼-in. carburetor of the plain tube type is supplied, incorporating an accelerator well.

The fuel feed system is an Oil-Vac adapted by Stutz engineers. The combustible mixture is heated by an exhaust gas hot spot. Heat adjustment is manual.

The water pump is driven from the accessory shaft, and a Pines Winterfront (shutters automatically operated by thermostat) is standard equipment. The fan is driven by the front-end drive chain.

Not only the radiator shell but also all other bright parts on both the Blackhawk and the Stutz models are chromium-plated over nickel.

Ignition is by Delco-Remy system with 40 deg. manual and 20 deg. automatic advance. The ignition switch is a Delco-Remy-Blossom. Champion spark plugs with metric threads are fitted. Packard Lac-Ard ignition cable is used. The starting motor and generator likewise are of Delco-Remy make. Lights on both models are Ryan-Lites made by the Indiana Lamp Corp.

The clutch on the new Blackhawk is a Borg & Beck. The gear ratio of the semi-floating Salisbury rear axle is 4¾ to 1, with 4¼ and 4½ to 1 optional. With the standard rear axle ratio the overall gear reduction on third is 6.07 to 1. The transmission ratio in second is 1.993 to 1, and the emergency low, 3.494 to 1. On both models the shift is standard, the emergency low being locked out to the left and forward to the reverse position.

Universal joints made by the Universal Products Co. are used, and torque and drive are taken through the springs. The propeller shaft is a one-piece tubular welded member. As in the Stutz, the rear axle is worm-driven, there being four threads in the worm. The bearings of the work shaft are adjustable by shims and are carried in a cage at the front and in a cup at the rear.

Springs are of silico-manganese steel, of the semi-elliptic type and 2¼ in. wide. The front springs are 38 in. long under load and the rear springs 60 in. Spring leaves are lubricated by penetrating oil.

A Gemmer worm-and-roller type steering gear is used, with a reduction of 18 to 1, making 2½ turns of the wheel necessary for a full left to right turn. The front axle also is a Salisbury, and is made with 1½ deg. of castor and 1 deg of camber.

The B-K booster brake is optional on the Blackhawk, but other features of the Stutz brakes are carried out in the companion car. Brake drums in the new jobs have been built up in such a way as to more readily dissipate the heat. A U-section, approximately ⅝ in. thick at the sides, has been shrunk on the brake drum, giving additional cooling area and adding largely to the rigidity of the drum. The vacuum booster is adjustable by a knob on the dash to give from 25 to 100 per cent vacuum action.

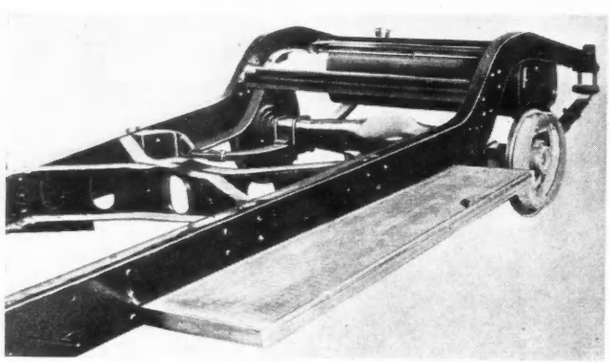
Molded Brake Lining

Gatke molded brake lining is continued in the Stutz and offered in the Blackhawk, as is the Lockheed internal hydraulic mechanism. The braking area is 238 sq. in. on the Stutz and 255.5 sq. in. on the Blackhawk. Front and rear brake drums on the Blackhawk are 14 in. in diameter, while the parking brake, mounted behind the transmission, has a drum diameter of 8 in.

The frame of the Blackhawk is made by Murray and is 7 in. deep, with 2⅛-in. flanges. The stock is 3/32 in. thick, and besides the usual tubular and pressed-steel cross-members, is braced by an X-member near the center.

Wheelbases of the 1929 Stutz have been increased to 134½ and 145 in.

The eight-cylinder engine that drops into the same Blackhawk chassis described above has the same bore and stroke as the 15-S Continental engine. It has the same piston displacement of 269.5 cu. in., and with a standard compression ratio of 5½ to 1, it develops 90 hp. at 3200 r.p.m. An optional compression ratio of 6 to 1 is available.



Rear end of Blackhawk frame, showing underslung spring pivoted inside of frame at forward end

The same Bohnalite pistons are used, but the steel rods have been increased in weight to 42 oz. The length of the piston likewise has been increased ¼ in. to 3⅝ in. Three compression rings and one oil control ring are above the pin. The crankpin bearing length has been increased to 1 5/16 in.

The crankshaft is mounted in five bearings of 2 13/16 in. diameter, bearing lengths being as follows (front to rear): 1 15/32, 1⅜, 1⅜, 1⅜ and 2⅜ in.

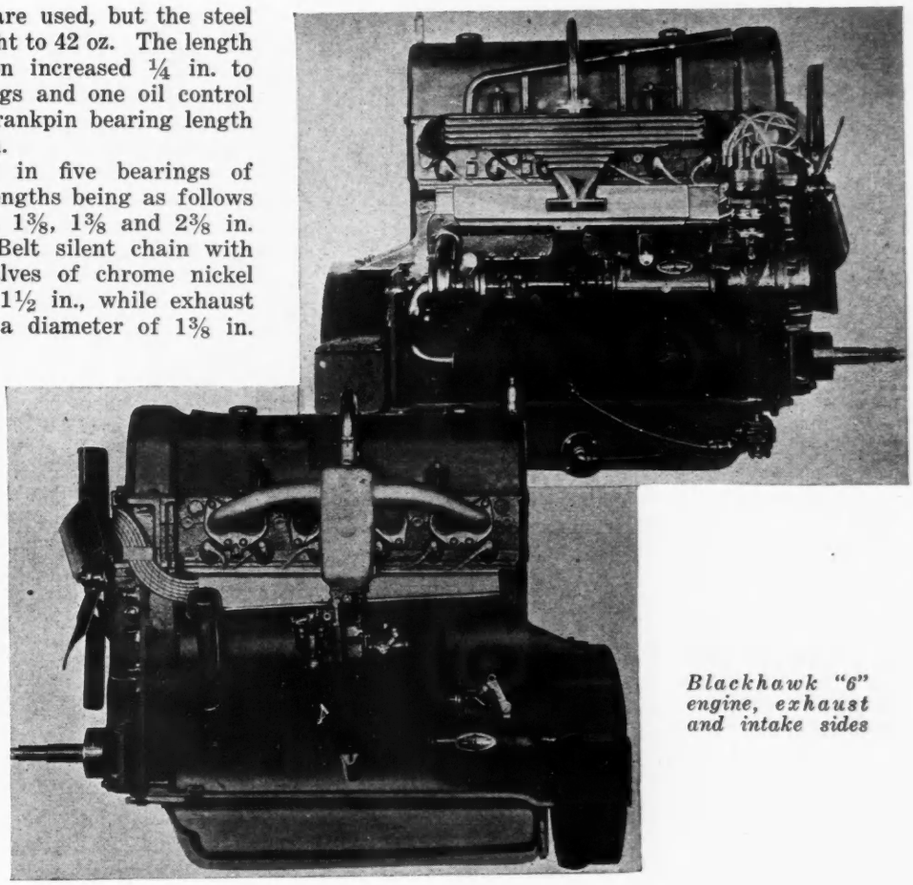
Front-end drive is by Link-Belt silent chain with manual adjustment. Intake valves of chrome nickel steel have a clear diameter of 1½ in., while exhaust valves of silchrome steel have a diameter of 1⅜ in.

Fuel feed on the eight engine is by AC diaphragm pump, but the same Zenith dual carburetor is used as on the six. The inlet manifold is a Swan type. The fan on the eight is driven by a 38-deg. V-belt.

Spark plugs on the eight have ⅞-18 threads, while otherwise the ignition equipment is the same as on the eight. All three models carry Prest-O-Lite batteries, that on the Stutz being slightly larger than the battery on the Blackhawk. The starting motor is Delco-Remy, but is engaged by inertia.

Tires on the Blackhawk are 31 by 6 balloons. Full de luxe equipment is supplied with the car, and whether wire or artillery wheels are used depends upon the body styles.

Front seats in all closed bodies are adjustable and also the backs on the rear seats. Various color combinations are available, with upholstery in mohair and broadcloth to harmonize. Dome lights and arm rests are provided in the closed models. Windows of all models are of Protex safety glass.



Blackhawk "6" engine, exhaust and intake sides

THE structural part of an airplane is built up of a large number of elements, and a rapid and economical method of joining these elements is needed, says a report of the Oxy-Acetylene Committee of the International Acetylene Association. Riveting, pinning and bolting, soldering, brazing and welding all have been advocated by different builders, and used with varying degrees of success. Welding has been in competition with the other methods named almost since the first airplane was built. However, the welding on some of the first airplane fittings was very crude and did not warrant the confidence of engineers. Application of welding in several industries forced the development of small, light-weight equipment, increased the facilities for distributing raw materials, and produced a body of mechanics who are skilled in handling an oxy-acetylene torch. The low cost of plant equipment and the ease with which joints can be made in thin metal without elaborate designs or expensive jigs could not be overlooked by the aircraft industry. The advantages of a rigid metal framework were recognized and added further impetus to the use of welding.

In 1921 the total number of airplanes produced in this country was 302. Practically all of these were wooden structures. In 1927 the production was 2353 and it has been estimated that this year the production will be from 4500 to 7000. The latter figure probably more nearly represents the actual production. Approximately one-fifth will be for the Army and Navy. The remainder are commercial aircraft. Ninety per cent of these modern airplanes will have oxy-acetylene-welded steel fuselages, landing chassis, tail skids, and fittings.

Confidence of designers and manufacturers in the reliability of welding resulted from improvements in design and the eminently satisfactory service obtained with the first welded fuselage or bodies. An airplane structure comprising a welded steel-tube fuselage, landing gear and tail skid may be regarded as the present standard type. It has been developed in order to obtain strength and rigidity with minimum weight and to use methods which are applicable to small or large production at relatively low cost for material, labor and overhead.

The safety factor in welded construction has been amply demonstrated.

The airplane of the next few years will be similar to the modern craft. Production costs will be decreased.

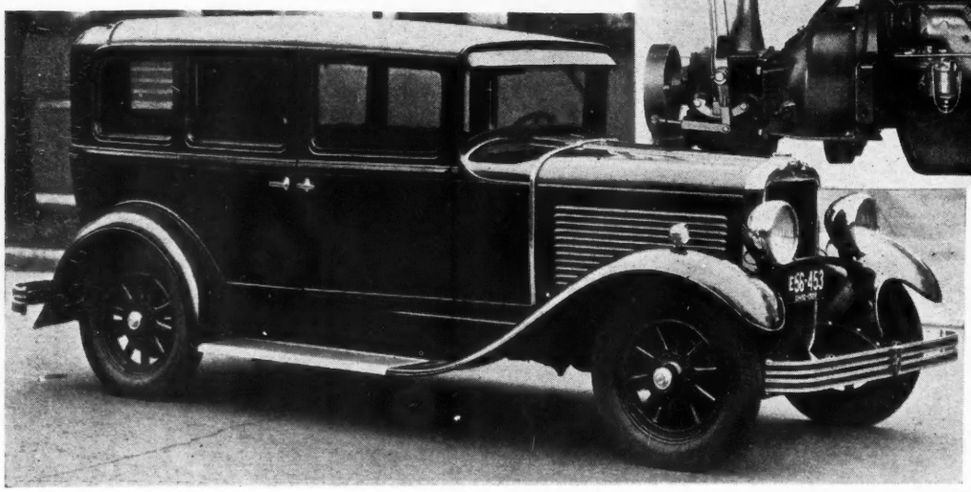
Buick Shows New Coupe

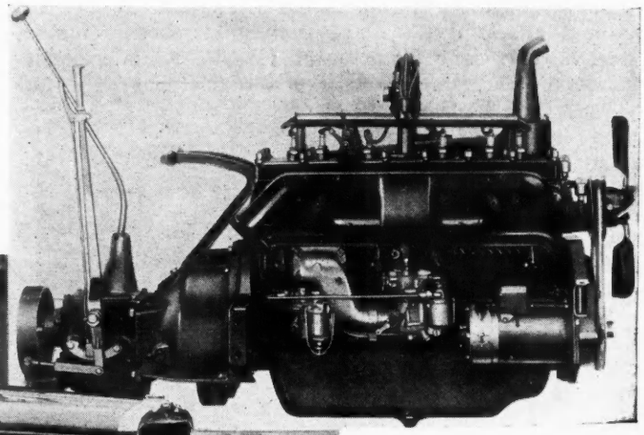
BUICK'S exhibit at the New York Automobile Show is featured by the addition of a four-passenger coupe on the 121-in. wheelbase chassis, which is shown there for the first time. As on all other Buick models it has a 3½-in. adjustable driver's seat, and a tandem windshield wiper and side cowl ventilators are included in the equipment.

Only one minor change appears on the cars, consisting of a new style hub cap with the rectangular Buick emblem set into a red enameled background.

Peerless *Series 61* is Announced *in* Three Body Styles

New line will be in same price class as Model 60 which it replaces. Brakes changed.





Side view of Peerless Six-61 engine and, at left, Peerless Six-61 sedan

NEW bodies, with roomy interiors and pleasing exteriors, internal hydraulic brakes and additional refinements are found in the new series 61 Peerless, which at the present is offered in sedan, de luxe sedan and roadster models. The new series will be in the same price class as the Model 60, which it replaces, and prices will be announced during the New York Show.

The bodies differ materially in appearance from the former series and are built up of steel stampings. While they are low, they afford ample head room. The appearance of reduced height is assisted by bringing the fabric top covering down over the sides to the drip molding which is immediately over the doors. Front pillars are curved and blend into the rounded belt molding at the bottom. The surface of the cadet type visor is smooth, presenting a surface unbroken by paneling. The radiator is higher, with a false bottom, and the chromium-plated shell is decorated by a new name-plate consisting of a red and blue P on a shield. The horizontal hood louvres are unusually long, extending nearly the entire length of the hood.

An interesting innovation is presented in the parking lights, which have been placed on the front fenders instead of the cowl. These, together with tilt-ray headlamps, which they match, and the double-bar bumper with the Peerless shield at the center, give a pleasing frontal appearance. The rear fenders have been given a backward flare at the bottom, which is in pleasing harmony with the low incidence front fenders.

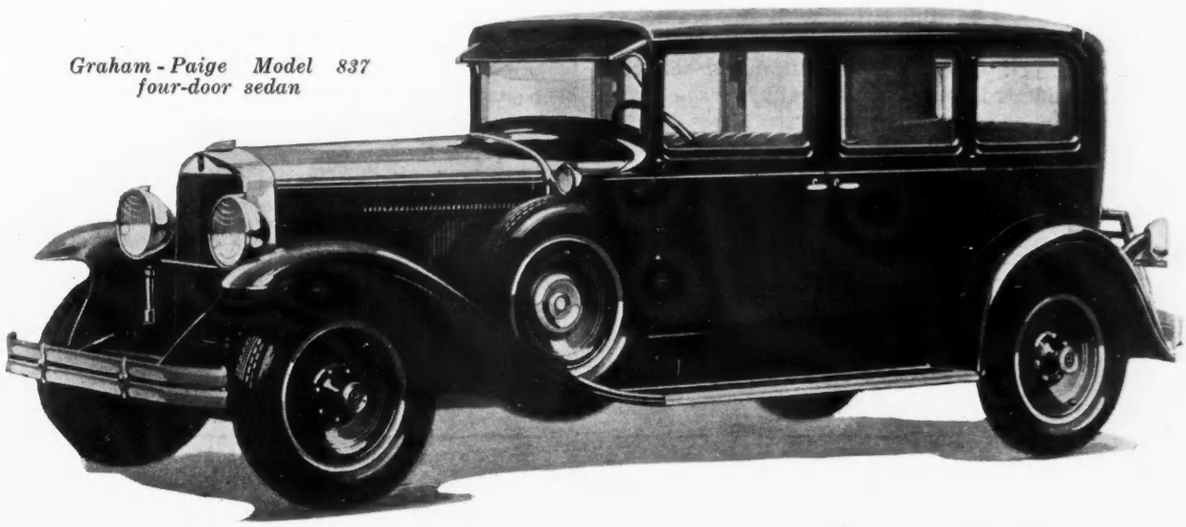
The 3⅜ by 4 in. engine is supported at four points by rubber pads, which reduce the transmission of vibration to the body. A Model UX Stromberg carburetor replaces the Model TX of the same make used on the previous series, and the fuel is now supplied by an AC fuel pump, mounted on the right side of the engine.

The frame has been strengthened by the addition of a tubular cross member, placed immediately behind the transmission. Bumper brackets are now integral with the spring horns. Internal hydraulic brakes, operating in 12-in. drums, replace the external brakes used on the former models and a self-compensating master cylinder is incorporated in the design. Ten-spoke artillery wheels, fitted with 29 by 5.25 in. tires, are standard equipment, and de luxe equipment calls for wire wheels.

No changes have been made in the 10-in. single-plate clutch, three-speed transmission nor in the semi-floating rear axle, which has a gear ratio of 4.88 to 1.

Standard equipment includes a coincidental lock, Lovejoy shock absorbers, an automatic windshield wiper and a rear traffic signal.

A GROUP of Belgian financiers interested in Minerva Motors of Antwerp have been negotiating with a view to securing an interest in the German Mercedes-Benz firm. A considerable "packet" of Mercedes-Benz stock (14,000,000 marks) is in the hands of the Schapiro group of capitalists, and it is this stock in regard to which there have been negotiations. The Belgians have allowed a preliminary option on the stock to lapse, but negotiations are said to be continuing. Since the total amount of the capital stock is 50,000,000 marks, the conclusion of the deal would not involve transfer of the control of the firm.



Graham-Paige Model 837 four-door sedan

New *8-Cylinder* Model Offered by Graham-Paige

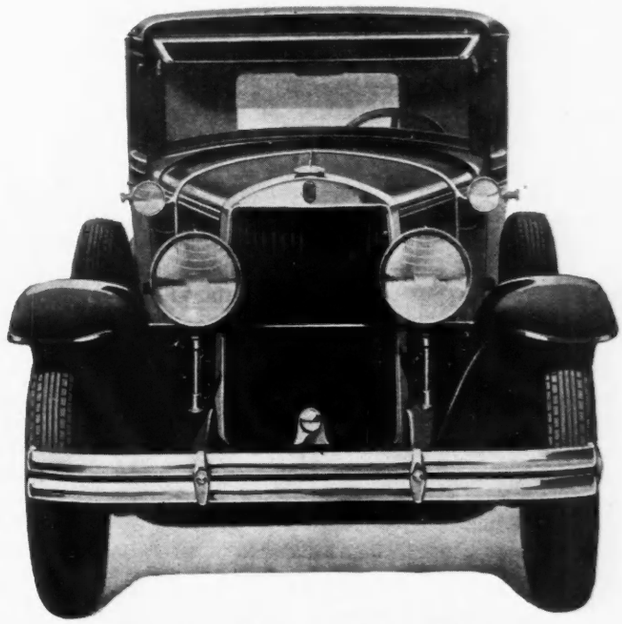
Line as revised consists of three sixes and two eights. All engines have more power. Bodies are new.

INCREASED power, new bodies on the two smaller sixes, a new eight in place of the largest six, and a host of body and chassis refinements on all cars briefly summarizes the changes made by Graham-Paige for 1929. The line-up now consists of three sixes and two eights, with the following chassis model designations: 612, 615, 621, 827 (new) and 837. Six body styles are offered on both the 621 and 827 chassis, while seven different body types are available on each of the remaining models.

Prices have not been announced.

Starting with the engine, crankpins on all cars are 1/8 in. larger in diameter than formerly, except on the 621. This change was made advisable by the gain in power secured through the use of mufflers with less back pressure and, in the cases of the two smaller sixes, by an increase in the cylinder bore. Delco-Remy electrical equipment has been adopted for all models. Other changes include the revamping of the distributor spark advance curves in the automatic range, the interconnection of throttle and choke controls to prevent overchoking, and the adoption of oval air cleaners of the oil-wetted type. The oval shape was adopted to permit of a larger opening in the space available between the engine and the hood.

All cars with the exception of the smallest six have the Graham-Paige four-speed transmission. All frames have wider flanges on the side rails, and on some models the channel depth has been increased. In addition, the side rails now are reinforced by a riveted-in strut at the front kick-up. On the larger cars, similar struts are used also at the rear kick-up. The advantage of this construction over the reinforcing plate is that it offers greater resistance to twisting. The wide plate at the rear of the frame has been replaced by two channel members on the two smaller models and by one channel and one tubular member on the other three models. Another feature of all models, which perhaps

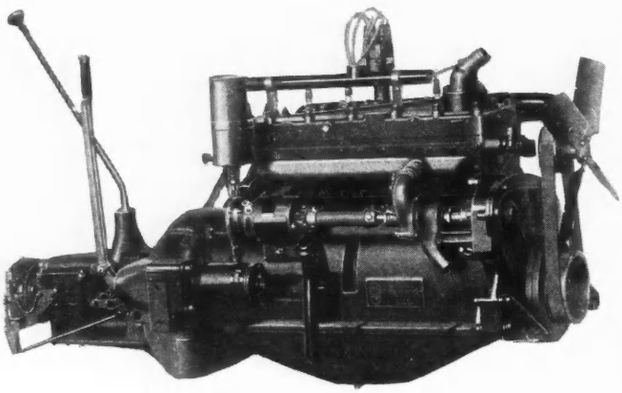


Front view of Graham-Paige Model 837

should be mentioned in connection with the frame, is the new shear-type rubber rear engine support. It consists of a thick pad of soft rubber, vulcanized between two plates. The unit is installed vertically and one plate is secured to the chassis frame while the other carries the engine mounting. Because of its cross-wise rigidity it acts as an additional cross-member, while permitting motion in the vertical plane.

Other chassis improvements include the drilling of a cap screw near each end of the rear axle housing, to prevent the building up of air pressure within the housing, a frequent cause of grease leakage through the axle ends.

Several changes also have been made in the fuel system. The vent is placed in the center of the tank to prevent spilling when turning corners, and on the larger cars the gasoline pipe line is placed outside the frame



Graham-Paige Model 615 engine

channel to expose it as much as possible to cooling air. This practice has been adopted particularly for the benefit of users in hot climates, where gasoline often vaporizes in the line. All cars are now equipped with Johnson carburetors and AC fuel pumps.

Chromium-plating is now largely used on all cars. The headlamps have been redesigned with ornaments on the door, and the combination tail and stop-light is modeled in the form of the Graham-Paige emblem.

Further changes are found on the three largest cars, the 621, 827 and 837. Thermostatically-operated vertical vane radiator shutters replace the false radiator front. These are full length shutters and conform to the characteristic curvature of the radiator. When operated, the vanes turn in from both sides, giving a more pleasing effect when open or partly open. A thermostat in the water riser on the cylinder head furnishes additional temperature control.

On these three cars Bijur centralized chassis lubrication is used, a foot-controlled pump being mounted on the dash. To prevent binding of the clutch throw-out shaft, the latter is now mounted in a bronze bushing in the clutch housing, which gives it support over a greater length. Starter engagement on these models is now by manual shift. Houdaille shock absorbers have been adopted and the width of the bands for the transmission brake has been increased to 2½ in.

Taking the cars individually, the 612 has a bore and stroke of 3 by 4½ in. and develops 62 hp. at 3200 r.p.m. With the increased bore goes a larger, 1¼-in. carburetor. In addition to having a shear-type rubber mounting at the rear, as already described, the engine is supported on a rubber pad at the front. The most important change in the chassis is the adoption of internal hydraulic brakes, with 12-in. drums and 1¾-in. lining. A Ross cam-and-lever-type steering gear also is new on this model. Lovejoy shock absorbers have been adopted as standard equipment.

Bodies are longer and wider, and new in appearance, with a pleasing roof line. Much attention has been given to the prevention of body squeaks. Radiators have been deepened, although with the false front on this radiator, the core appears to extend the full length of the new shell. Tryon self-adjusting spring shackles and Hershey coincidental steering and ignition locks are other new features.

The 615 has new bodies and more power. The 3¼ by 4½-in. engine develops 77 hp. at 3200 r.p.m. and is fitted with a Lanchester vibration damper. This car also carries Lovejoy shock absorbers and Tryon shackles, and it has a deeper radiator shell, frame flanges ½ in. wider, and internal hydraulic brakes. The brake drums are 14 in. in diameter and the lining is 1¾ in. wide.

On the largest, the 621, the frame has been strengthened considerably and now has a channel depth of 7 1/16 in., a flange width of 2⅜ in. and a stock thickness of 5/32 in. Bodies are longer, and new upholstery materials are used.

Same Engine in Both Models

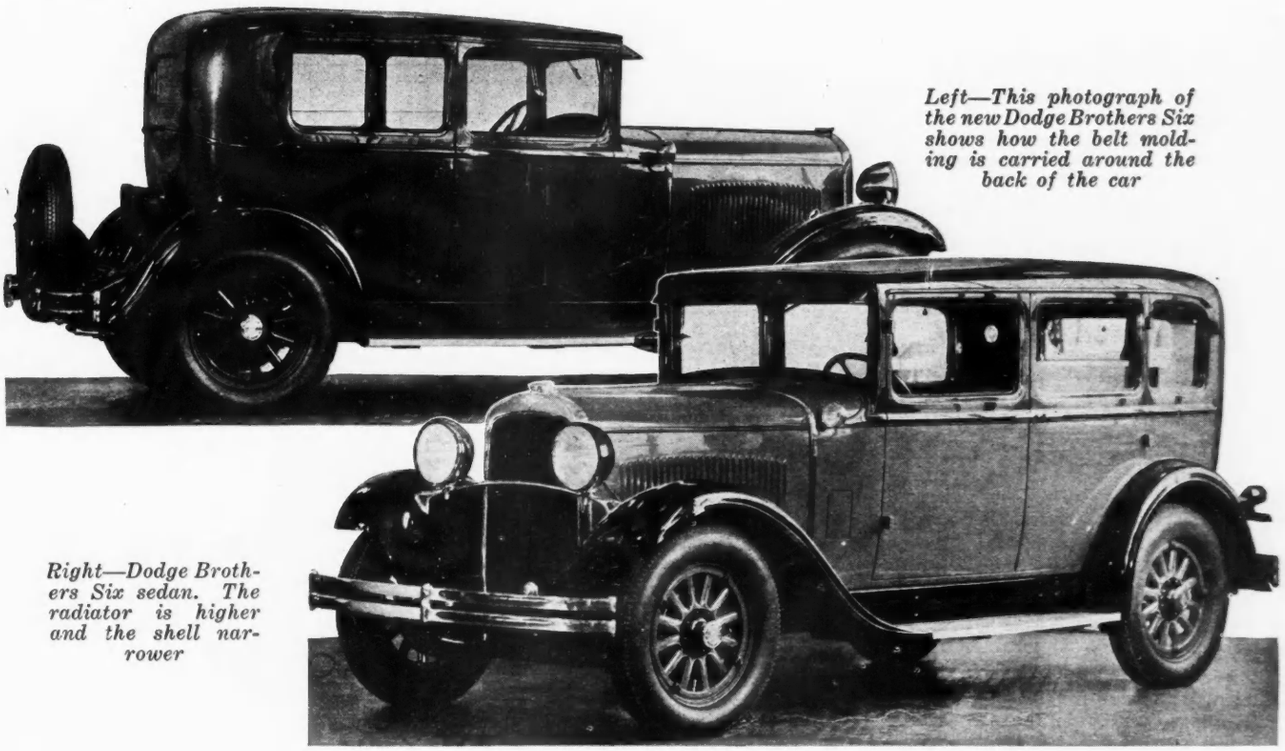
The 827 and 837 models use the same engine, which has a bore and stroke of 3⅜ by 4½ in. This engine is similar to the one used in last year's 835, but shows many refinements. These include clamping the piston pin in the rod, thus standardizing this design for all Graham-Paige cars. The oil distributor is now similar to that used on the sixes. Rubber mounting is used for the engine at both front and rear. The full length crankcase flanges have been widened for greater rigidity. In the ignition system a new double-breaker-arm, two-coil ignition unit has been adopted. The spark advance curve has been altered and ignition timing has been changed so that with the spark governor in the full-retard position the spark now occurs 4 deg. before top dead center.

To prevent back-firing, horizontal extension of the air intake on the carburetor riser is now provided, and as an additional precaution a drain pipe discharges overflow gasoline below the engine pan. To make the exhaust-heating of the combustible mixture more effective, the two center ports in the exhaust manifolds are now made one and the design has been changed so as to make the hot gases impinge directly on the "hot spot."

The pitch of the fan blades has been increased to give greater air capacity at low speeds, and the flat-belt drive for the fan is so designed that it is practically ineffective at high engine speeds. Ball bearings are now used in the engine mounting.

Both eights have frame side channels 7½ in. deep, with 2⅜-in. flanges and of 3/16-in. stock. On the 837 the bodies are 2 in. longer.

THE German Automobile Manufacturers Association (Reichsverband der Automobil-industry) has published a supplement to its Handbook of Automobiles or Typentafeln which appears as Part IV and covers 1929 models. Specifications and illustrations are given of new designs of passenger cars, motor trucks, buses, tractors, motorcycles, three-wheeled delivery wagons and chassis parts built by specialists. In an Appendix is given a glossary of automobile terms in German, English and French. The book is published by Dr. Ernst Valentin Verlag, Berlin-Friedenau.



Left—This photograph of the new Dodge Brothers Six shows how the belt molding is carried around the back of the car

Right—Dodge Brothers Six sedan. The radiator is higher and the shell narrower

Eight Models in Dodge Six Line

New belt and hood lines and narrower chromium-plated radiator shell contribute to improved appearance.

NEW belt lines and improved hood lines with a narrower chromium-plated radiator shell feature the Dodge Brothers Six for the coming selling season. Wheelbase and frame are unchanged, and there are no internal engine changes, but there are a number of mechanical refinements giving added performance and convenience.

Eight body models consisting of a sedan, de luxe sedan, victoria, brougham, rumble-seat coupe, business coupe, roadster and phaeton, will form the line, and prices will be announced at the New York show.

The V-shaped raised paneling which decorated the top of the hood on the original Victory six is narrower at the front and is now carried back over the cowl, where it widens out, curving downward to join the belt molding. Formerly the belt molding gave a panel effect, but on the new cars it is a single band, extending back to the rear quarters, where it becomes narrower and passes around the back of the car. The hood has been lengthened to cover a portion of the radiator shell, and in this and in the treatment of the hood louvres it shows the influence of Chrysler design.

Ventilators, one on each side of the cowl, have replaced the single ventilator at the top, resulting in better ventilation of the driving compartment.

A new radiator emblem, built around the original Dodge Brothers insignia, decorates the front of the shell. Wings have been placed on each side of the circular nameplate, while pointed rays extend from the top and bottom. The higher, full-depth radiator, with its narrower shell and winged insignia, together with the new depressed beam headlamps, joined by an arched chromium-plated tie-bar, gives a pleasing frontal appearance.

Car interiors have also been improved. The upholstery is mohair, in shades to match the exterior finish. All instruments, including the starter switch, choke, spark lever and manifold heat control, are grouped together on a single panel on the instrument board. On the victoria and brougham models, the emergency brake lever is placed on the left, to provide additional room in the driving compartment.

The exhaust manifolding has been redesigned and the pipe now passes down at the front of the engine instead of at the rear, resulting in more comfortable temperatures in the driving compartment. The generator has been moved to the left side of the engine, where it is driven by a V-belt which also drives the water pump and fan.

No changes have been made in the Borg & Beck clutch, nor in the semi-floating rear axle. The propeller shaft and universals are now of Spicer manufacture and the three-speed transmission is a Dodge product with the countershaft carried on plain bearings. Other changes are of a minor character and introduced to simplify manufacturing.

Equipment includes an engine heat indicator, a dash gasoline gage, a traffic signal, bumpers and Lovejoy shock absorbers. Kick-type cowl ventilators are now furnished on all models. The tire size now is 29 by 5.50 in. All exterior bright parts are chromium-plated.

First with the News

Reliable and Accurate

News of the Industry

PAGE 32 VOLUME 60 *Philadelphia, Saturday, January 5, 1929* NUMBER 1

Largest First Quarter Indicated by Schedules

PHILADELPHIA, Jan. 5—With the official opening of the 1929 automobile sales season scheduled for today, when the New York show gets under way, the industry is speeding production plans to meet what is confidently expected to be the largest first-quarter in its history. Throughout much of the first-quarter there will be an actual shortage of cars, especially in the low-priced field, though the industry as a whole is geared for larger production than ever before.

Dealer stocks of new cars throughout the country are lower than at the start of any recent year, a condition largely resulting from the fact that there are practically no stocks of low-priced cars. Aside from this, however, heavy sales through most of the last quarter of 1928 kept stocks of all cars low, estimates from all sections of the country indicating reductions ranging about 20 per cent below the former year level.

Heavy shipments of new cars are now going forward to dealers, many of them getting their first 1929 cars for display. Shipments of this kind alone will

(Continued on page 38)

Continental Motors Net Increased to $2,070,457

NEW YORK, Jan. 2—Continental Motors Corp. reports net earnings for the fiscal year ended Oct. 31 as $2,070,457. This is equivalent to $1.12 a share and compares with net earnings for the previous year of $1,444,331, or 82 cents a share.

The annual report shows current assets as $13,906,939 and current liabilities of $2,166,577. Cash on hand is listed at $6,334,891.

In a statement to stockholders, R. N. Judson, president, said:

"Profits from operations exceeded by nearly $1,000,000 that of the previous fiscal year, and the substantially increased business has been handled with a smaller inventory. This has been reflected in the cash position which shows an increase of $2,207,886 over the conclusion of the 1927 fiscal year."

Spray Now Vice-President

CANTON, OHIO, Jan. 4—Timken Roller Bearing Co. has appointed Judd W. Spray vice-president and general sales manager. He has been general sales manager since 1926.

Truck-Bus Output Increased to 586,000

NEW YORK, Jan. 5—Production of trucks and buses increased to an estimated total of 586,000 in 1928, according to A. J. Brosseau, vice-president of the commercial car division of the National Automobile Chamber of Commerce. The former high mark was 531,628 made in 1925. Mr. Brosseau said further:

"The gains made during the year were almost entirely due to a greatly enlarged output of light, fast trucks of less than 2-ton capacity, as indicated by an estimated production of 521,000 in this capacity in 1928 as compared with 476,702 in the same capacity in 1925. Production of trucks of 2-ton capacity and over showed a gain of approximately 10,000 vehicles over the 1925 figure.

"A total of 131,781 trucks were exported from the United States and Canada in the first 10 months of the year, which was a greater number than were sold abroad during the entire 12 months of 1927, when 127,706 trucks were absorbed by foreign countries."

Chevrolet to Stage Meetings

DETROIT, Jan. 3—Chevrolet Motor Co. is again sponsoring its annual spring series of nation-wide sales meetings, the first of which is to take place next week in New York. This year the meetings are divided among three crews, each embracing five factory executives. Heading the crews are R. H. Grant, vice-president in charge of sales; H. J. Klingler, general sales manager; M. D. Douglas and D. E. Ralston, assistant general sales managers. The itineraries of the three crews will carry them to every key city.

Segrave Arrow Has New 1000 HP. Engine

NEW YORK, Dec. 29—The "Golden Arrow," in which Major H. O. D. Segrave expects to set a new speed record at Daytona, is nearly ready for shipment from London, according to word received here this week. Major Segrave said it is an entirely new car with a new 1000-hp. Napier engine and that he expects it to do 240 m.p.h. Ice-cooling will be a feature and he said the car had been stream-lined to the absolute limit.

Lycoming 1929 Contracts More Than Double 1928

WILLIAMSPORT, PA., Jan. 2—Lycoming Mfg. Co. reports contracts for 1929 more than double those of 1928. The company has spent more than $500,000 in factory improvements and expansion during the past year and the 1929 program calls for the expenditure of several hundred thousand dollars more.

W. H. Beal, vice-president, said that every company using Lycoming engines had increased its contracts over 1928 and in two instances contracts are for practically double the 1928 number.

Ford Operates 6 Days, Continues 5-Day Week

DETROIT, Dec. 31—Ford Motor Co. will start operating its plants six days a week at once and will add 30,000 employees. The five-day-week per person will be continued with rearranged working schedules so that the factories will be placed on a six-day-a-week basis.

Hudson Schedules 250,000 in Half

DETROIT, Jan. 2—Hudson Motor Car Co. has scheduled an output of 250,000 for the first of 1929, the first quarter production to reach 120,000. This compares with a total production of 280,000 in all of 1928. Starting operations on its new models in December, the company built 20,000 which will be increased to 30,000 in January with more rapid step-ups in February and March.

4,750,000 Production Foreseen by Chrysler

Says Present Rate of Prosperity Normal—Expects Exports of 1,000,000

NEW YORK, Jan. 3—W. P. Chrysler, president of Chrysler Corp., in a statement on 1929 outlook said: "The year 1929 should be one of unprecedented prosperity. Good times should be experienced not only by the great majority of our own people but by those of almost every other country. The present rate of prosperity, which would have been considered abnormal only a few years ago, is in thorough keeping with the modern speed with which we do things—a speed to which the automobile has contributed mightily.

"Our automobile industry will achieve another production and sales record. I believe the figure will be approximately 4,750,000 cars by the end of next December. I believe the United States and Canada will export, during the year, approximately a million automobiles, thus realizing an ambition that has dominated our manufacturers for some time."

More Effective Selling Greatest Need, Says Sloan

NEW YORK, Jan. 5—Commenting on the motor car outlook for 1929, Alfred P. Sloan, Jr., president of General Motors Corp., said: "To my mind the greatest problem that confronts the industry from within is more effective merchandising of the product. I mean by this, the building of a sounder foundation for the automotive dealer and with this development of good-will toward the industry through more effective service. The greatest asset that any industry or business can possibly have is the good-will of the public toward it and its products. To my mind, effective service or a satisfied customer will exert for us a greater influence in developing good-will than millions of dollars spent in advertising. I mention this because I do not believe the industry as a whole has intensified on this most important subject to the same degree that it has on other phases of its activities."

G.M. Truck Schedules 36,000 Output in 1929

DETROIT, Dec. 31—General Motors Truck Co. will spend $2,000,000 for advertising and sales extension work in 1929, it was stated today by President Paul W. Seiler, who announced that the company is entering the year with a tentative production schedule of 36,000 vehicles for domestic sale.

In 1927 the company built approximately 12,000 units while the output for 1928 totals about 26,600, he said. During the past year the company has been busy perfecting its lines and making the new $8,000,000 factory at Pontiac ready for an aggressive selling campaign during 1929.

Effective Jan. 1, General Motors Truck will abandon the nominal payload rating on their entire line of trucks. In the future the company will sell its trucks on a maximum total gross weight rating.

Mr. Seiler was host last night to 250 executives of his company and friends at a banquet held in the Hotel Roosevelt, Pontiac. Louis Ruthenberg, vice-president, presided and talks were given by O. L. Arnold, vice-president in charge of sales, and Mr. Seiler.

Marmon's New Roosevelt to be Eight-Cylinder Car

INDIANAPOLIS, Dec. 29—In a statement following the authorization today of an increase in common stock, Marmon Motor Car Co. said the new Roosevelt car will be brought out in February and that it will be an eight-cylinder car to list at less than $1,000.

Stockholders passed a resolution to increase the authorized common stock from 200,000 shares of no par value to 400,000 shares. Directors at a later meeting voted to offer 60,000 shares of the additional stock for subscription to stockholders at $55 a share in the proportion of three-tenths of one new share for every former share held as of Jan. 17, 1929.

Willys Schedules 300,000 by July

TOLEDO, Dec. 31—Willys-Overland Co. completed the year with a total production exceeding 315,000 cars, and is now building new Whippets at the rate of 1000 every day. December shipments of the new models exceeded 15,000, while January schedules call for more than 35,000, with the daily production gradually increasing to more than 1500 by the middle of January, President John N. Willys said. The company's new body plant in Toledo is in full operation and is making possible several important economies as well as greatly improved quality, Mr. Willys pointed out.

Willys-Overland's production schedule for the first six months of 1929 is 300,000 cars. The highest previous six months' record was 200,000 in 1928.

Set New Records in 1928

DETROIT, Jan. 2—Hudson Motor Car Co. shipped 282,000 automobiles in 1928, making a new record. This compares with approximately 280,000 in 1927.

Hupp Motor Car Corp. set a new all-time record in 1928, shipping 65,857 cars, compared with 41,160 cars in 1927 and 45,426 in 1926, the best previous year.

Buick Motor Co. shipped 12,897 cars in December, compared with 12,900 in December, 1927, and 16,000 in November, 1928.

Graham-Paige Motors Co. production for 1928 totaled 73,195, three and one-half times the 1927 total. Highest production of the Paige-Detroit company was 43,556 in 1923.

Business in Brief

Written by the Guaranty Trust Co., New York, exclusively for AUTOMOTIVE INDUSTRIES.

NEW YORK, Jan. 3—There has been some falling off of trade and industry toward the close of the year, but this is in line with the usual seasonal trend, and trade continues to compare favorably with that of a year ago. Holiday buying was well above that of a year ago.

CROP VALUATION

The total value of agricultural products in 1928 is estimated at $8,456,052,000, which compares with $8,522,563,000 in 1927 and $7,793,480,000 in 1926, according to a report issued by the United States Department of Agriculture on Dec. 14. Increased acreage and higher yields are responsible for this increase in value of crops in 1928.

FREIGHT CAR LOADINGS

Car loadings for the week ended Dec. 15 totaled 964,086 cars. This represents a decrease of 20,266 cars under those in the previous week, but an increase of 95,336 over those for the corresponding week in 1927.

FISHER'S INDEX

Professor Fisher's index of wholesale commodity prices for the week ended Dec. 29 stood at 97.2, which compares with 96.9 the week before and 96.8 two weeks before.

BANK DEBITS

Bank debits to individual accounts outside of New York City for the week ended Dec. 26 were 15 per cent above those in the similar week a year ago.

STOCK MARKET

The stock market has gained further during the last week. The volume of trading was moderate; and, while there were some declines, the general trend was upward. Call money reached as high as 12 per cent. Brokers' loans in New York City for the week ended Dec. 26 decreased $19,395,000, making the total on that date $5,091,427,000.

FEDERAL RESERVE REPORT

The consolidated statement of the Federal Reserve banks for the week ended Dec. 26 showed increases of $220,900,000 in holdings of discounted bills, $36,200,000 in bills bought in the open market, and $83,300,000, in member bank reserve deposits. There was a decrease of $58,200,000 in holdings of United States Government securities. The reserve ratio on Dec. 26 was 61.6 per cent, which compares with 64.5 per cent the week before.

Hennecke Leaves Hollingshead

NEW YORK, Jan. 2—Earle V. Hennecke has announced his resignation as vice-president in charge of sales of R. M. Hollingshead Co., Camden, N. J. He will devote his entire time to the operation of Earle V. Hennecke, Inc., this city.

5,000,000 Production Now Normal Mark

N.A.C.C. Head Says Increased Foreign Trade Makes New Figure Reasonable

NEW YORK, Jan. 5—Pointing out that foreign registration of automobiles has now approached the 4,000,000 mark and that 1,000,000 cars a year for export is far from a remote possibility, Alvan Macauley, president of the National Automobile Chamber of Commerce, in a statement today, said that beginning with 1929 the American automobile industry should look for 5,000,000 cars a year as normal production.

Competition in the automobile industry has been established on a system of merit rather than prices, Mr. Macauley pointed out. He said there are more than 3,000,000 families owning two or more automobiles.

There are 5,450,000 motor vehicles on the farm today. More than one-sixth of the automotive business in terms of dollars is in the sale of trucks and buses, Mr. Macauley said. As to the future he said:

"I am sometimes asked what I think of the future of the motor business over a long range period. Probably the best response to that is the statement that 93 per cent of the world's population living outside of the United States own but 22 per cent of the world's automobiles. Add to this a belief in the continued growth and prosperity of the United States. With the vast opportunity for new business abroad and the continuous demand for new and replacement vehicles at home, the automobile industry looks forward to a steady advance."

More than 810,000 motor vehicles were exported from the United States during 1928, according to John N. Willys, chairman of the export committee of the N.A.C.C.

Two Nash Executives Lose Sons in Car-Train Crash

KENOSHA, Dec. 31—Ferrin Alford, 17-year-old son of W. H. Alford, vice-president of Nash Motors Co., and Lowell Smith, 16-year-old-son of Edwin L. Smith, sales manager of the same company, were among the five who were killed when a train crashed into two automobiles at a Kenosha grade crossing Saturday night.

Wico Electric Expands

SPRINGFIELD, MASS., Jan. 2—Wico Electric Co., manufacturer of magnetos and batteries, has built a one-story addition, 100 by 80 ft., to its plant, to meet general expansion needs. Production has been sustained at a high rate in recent months, and an excellent showing has been made for 1928, with export gains a strong factor.

Companion of Olds Under Way by April

LANSING, Jan. 5—A companion car to the Oldsmobile Six has been announced by Olds Motor Works. The new car will be sold through Oldsmobile dealers and deliveries will be under way by April 1. It will, it is stated, introduce to its price field, a type of engineering formerly associated only with cars in the highest price class.

Studebaker Commander 8 is Priced $1,525 to $1,675

SOUTH BEND, Jan. 2 — Prices on the new Commander Eight line of the Studebaker Corp. of America have a price range of $1,525 to $1,675. Prices on the Commander Six line have been reduced slightly and now range $1,350 to $1,525. On the President, 135 in. wheelbase, the range is $2,175 to $2,575; on the President, 125 in., $1,785 to $1,895. Prices on the Dictator and Erskine are unchanged. Bumpers and wire wheels are extra on all models as optional equipment.

Auburn Offers 120 Line Priced $1,795 to $2,095

AUBURN, IND., Dec. 29—Auburn Automobile Co. is introducing its new Model 120 to take the place of the former 115 line at a price reduction of $300. Improvements to the frame, braking system and engine are noted with an entirely new type of radiator suspension. New and old prices follow:

	New	Old
Sport Sedan	$1,795	$2.095
Sedan	1,895	2,195
Speedster	1,895	2,195
Cabriolet	1,895	2,195
Victoria	1,895	....
Phaeton sedan	2,095	2,395

Nachman Buys National and Forms New Company

DETROIT, Dec. 29—The Nachman Co., of Chicago, has purchased the National Spring & Wire Co., of Grand Rapids, for more than $1,000,000. The personnel of the company will remain unchanged and the company will be known as the National Marshall Spring Co.

Get Soviet Orders

NEW YORK, Jan. 2—Amtorg Trading Corp., acting for the Soviet Automobile Trust, has placed $250,000 in orders for engines and transmissions with the Hercules Motors Co. and Brown-Lipe Gear Co. The equipment is to be used in 3½-ton trucks and buses, replacing German equipment.

Industry Increases Acceptances of Steel

Much of Current Quarter Needs for Sheet and Strip Bought in December

NEW YORK, Jan. 3—Contrary to the usual first-week-of-the-year uncertainty in the steel market, confidence prevails on all sides with routine tasks engaging every one's attention. Mills are gradually shipping more and more steel to automotive consumers who had asked postponement because of the Michigan State tax on Jan. 1 inventories. Most of the producers, especially sheet rollers, have so comfortable a backlog of orders on their books that they worry very little about the possible backwardness of fresh buying in January.

It is generally conceded that a good deal in the way of sheets and strip-steel for the current quarter's operating schedules was covered by December buying, but with the momentum of absorption maintained at recently established levels, this is taken to indicate a perfectly natural reaction from the hand-to-mouth buying that was in vogue formerly.

The market for steel bars is a shade firmer at 1.90 cents, Pittsburgh, for tonnage orders and 2.00 cents for smaller lots. Cold-finished bars hold firm at 2.20 cents, Pittsburgh. Makers of automotive alloy steels are fairly busy. The hot-rolled strip steel market is steady at 1.90 cents to 2.00 cents, Pittsburgh, on 6-in. and narrower strip and at 1.80 @ 1.90 cents for 6 to 24-in. strip. The cold-rolled strip steel market is quotable at 2.85 cents, Pittsburgh, for attractive specifications, with a $2.00 per ton advance over that level in the case of less inviting business.

Pig Iron—The market is spotty. Some foundries are reported to have asked for good-sized shipments on account of first-quarter contracts while others are out of the market. Valley foundry iron is easy at $18, the Michigan quotation continuing at $20.

Aluminum—According to all precedent, the sharp rise in the copper market should cause a sympathetic advance in aluminum prices, but so far there has been no indication of any price alterations by the sole domestic producer.

Copper—With the market's advance to 16½ cents came intimations of further raising of prices by producers.

Lead—The market has turned strong. Consumers are less active on the buying side than are dealers.

Spraco Formed in Merger

SOMERVILLE, MASS., Jan. 2—The Spray Engineering Co. and the Spraco Painting Equipment Co., have been merged as Spraco, Inc., with headquarters here. T. W. Pelham is chairman of the new company; W. B. Thompson is president, F. G. Dennison, vice-president, and W. F. MacDonald, treasurer.

Exports, Imports and Reimports of the Automotive Industry for November of Current Year and Total for Eleven Months Ending November, 1928

	Month of November				Eleven months ending November			
	1927		1928		1927		1928	
	Number	Value	Number	Value	Number	Value	Number	Value
Automobiles, parts and accessories	..	$32,666,359	..	$47,625,565	...	$390,873,304	..	$500,673,370
Electric trucks and passenger cars	1	4,088	16	30,226	110	198,053	112	147,549
Motor trucks and buses and chassis, except electric (total)	9,999	6,559,230	17,209	9,616,047	98,311	64,381,013	129,793	84,594,949
Up to 1 ton, inclusive	8,283	4,160,064	13,950	6,044,197	80,249	37,896,376	98,420	48,024,869
Over 1 and up to 2½ tons	1,579	2,023,633	3,033	2,949,381	15,952	20,309,304	28,453	29,305,969
Over 2½ tons	137	375,533	226	622,469	2,110	6,175,333	2,900	7,264,111
PASSENGER CARS								
Passenger cars, except electric (total)	21,402	16,400,701	29,684	21,733,510	262,275	193,656,304	347,383	246,852,583
Value up to $500, inclusive	3,985	1,448,665	...	...	60,537	22,463,854	...	...
Value over $500 to $800	6,700	3,698,783	...	...	87,188	48,500,074	...	...
Value over $800 to $1,200	7,264	5,964,789	...	...	76,531	65,452,448	...	...
Value over $1,200 to $2,000	2,643	3,336,900	...	...	29,590	36,982,532	...	...
Value over $2,000	810	1,951,564	...	...	8,429	20,257,396	...	...
PARTS, EXCEPT TIRES								
Automobile unit assemblies	...	1,819,426	...	4,333,912	...	39,129,035	...	58,019,048
Automobile parts for replacement	...	4,313,006	...	7,014,301	...	45,743,998	...	55,452,600
Automobile accessories	...	563,573	...	782,916	...	7,308,100	...	8,465,262
Automobile service appliances (n. e. s.)	...	313,368	...	625,848	...	6,657,332	...	6,629,401
Station and warehouse motor trucks	5	128,794	9	26,065	102	503,017	62	426,114
Trailers	58	23,251	71	35,066	883	398,547	776	357,845
Airplanes, seaplanes and other aircraft	8	128,000	8	76,385	52	720,906	148	1,604,210
Parts of airplanes, except engines and tires	...	31,731	...	50,420	...	532,910	...	1,139,902
BICYCLES								
Bicycles	407	9,803	656	16,674	4,240	114,948	4,725	125,355
Motorcycles	1,551	348,837	1,384	305,370	17,860	4,017,539	17,369	4,025,187
Parts, except tires	...	141,518	...	142,152	...	1,193,638	...	1,380,836
INTERNAL COMBUSTION ENGINES								
Stationary and Portable								
Diesel and Semi-Diesel	15	111,418	23	92,944	594	1,097,666	910	1,072,612
Other stationary and portable:								
Not over 10 Hp.	2,502	226,921	3,524	291,648	26,913	2,404,505	35,807	3,027,307
Over 10 Hp.	286	116,115	120	162,401	2,639	1,543,168	4,592	1,913,101
Automobile engines for:								
Motor trucks and buses	118	53,017	467	103,480	5,181	647,356	15,651	1,569,886
Passenger cars	2,283	392,947	3,002	415,560	89,967	9,952,416	102,693	10,860,033
Tractors	45	18,067	31	2,550	1,170	461,561	666	213,083
Aircraft	10	56,838	30	80,671	75	432,122	162	571,934
Accessories and parts (carburetors)	...	208,677	...	233,492	...	3,037,668	...	3,232,100
IMPORTS								
Automobiles and chassis (dutiable)	65	156,254	68	162,565	572	1,095,298	499	1,105,212
Other vehicles and parts for them (dutiable)	...	32,669	...	50,666	...	243,078	...	562,181
REIMPORTS								
Automobiles (free from duty)	10	42,913	33	33,955	159	262,835	248	272,919

British Motorcycle Sales Hit by Light Car Gains

WASHINGTON, Jan. 2—Evidence of the inroads of the ultra-light automobile into the motorcycle industry is reported to have been given at the recent annual meeting of the Triumph Cycle & Motor Company, Ltd., in London, where the chairman of the board is reported to the Department of Commerce to have stated that the competition has been particularly noticeable during the last two years.

These inroads are said to be continuing and it has been estimated that sales of motorcycles have decreased by 30 to 40 per cent in the British market during the last year. To meet competition, it was suggested that motorcycle manufacturers center attention on reducing prices, providing machines fully equipped for the road and developing lightweight machines to attract pedal bicyclists.

C.I.T. Opens in Argentine

NEW YORK, Dec. 29—Commercial Investment Trust Corp. has opened a new branch to be operated by its subsidiary, Commercial Investment Trust Co., Ltd., at 66 San Martin, Buenos Aires. C.I.T. now serves its clients through more than 100 offices in this country and abroad, operating in the United States, Canada, England, Germany, France, Denmark, Porto Rico, Cuba and South America.

China Drafts New Tariff

WASHINGTON, Dec. 29—A duty of 12½ per cent ad valorem and 22½ per cent ad valorem is placed upon buses (complete) and passenger cars and accessories entering China, effective Feb. 1, 1929, under a new tariff schedule, according to the Department of Commerce reports from Shanghai. The 12½ per cent duty applies only to buses when delivered complete to a Chinese port. The 22½ per cent duty includes motorcycles, as well as passenger cars, chassis, all parts, tires and accessories for automotive products.

Polish Registry Up 27%, Increase Highway Funds

NEW YORK, Dec. 29—Registrations of automobiles in Poland have increased about 27 per cent during the current year, according to a government survey recently made in Warsaw. Sales this year have been well over 6000 and registration at the beginning of the year was 21,922 passenger cars, buses and trucks as compared with 18,754 at the beginning of 1927. This means that today there is one automobile for every 1174 persons in Poland as compared with 3168 in 1924.

The Ministry of Public Works at present is devoting all available funds for the construction of new roads and approximately $4,700,000 will have been spent on arterial highways this year as compared with $3,100,000 in 1925.

Moon Gets Order From India

ST. LOUIS, Dec. 29—E. A. Serrano, export manager of Moon Motor Car Co., reports his company has received a 50-car order from its dealer, P. Banerji & Co., Calcutta. Shipment is to be made at once.

New Zealand Sales Reach Record During November

WASHINGTON, Jan. 2—New Zealand has a record month for motor sales in November, surpassing any period in its history in this respect with 2237 passenger cars and 369 commercial vehicles registered, the Department of Commerce is advised by cable from Wellington. Sales for December would have shown even larger figures, it is believed, but stocks are somewhat depleted. The outlook for 1929 is the most promising in the history of New Zealand's motor trade. American car sales are reported holding their own nicely.

Canada Changes Parts List

WASHINGTON, Jan. 2—Concessions whereby certain automobile parts may enter Canada at the 20 per cent ad valorem duty in cases where the specific part is not manufactured in the Dominion have been canceled on three parts, it is announced by the Department of Commerce, and the higher ad valorem duty will now go into effect. The parts affected and the duty for each part are as follows: Front axles for motor trucks of less than 5-ton capacity, 35 per cent ad valorem; steel chassis frames for light motor trucks, 30 per cent ad valorem; transmissions for motor trucks of ½ and 1-ton capacity, 27½ per cent ad valorem.

Harry Cox

DETROIT, Dec. 29—Harry Cox, superintendent of the axle division of the Olds Motor Works, is dead of pneumonia.

Men of the Industry and What They Are Doing

Moskovics and Gorrell Address Stutz Meeting

More than 400 distributors and dealers were in attendance at the annual convention of the Stutz Motor Car Co. of America. Many of the delegates remained in Indianapolis an extra day to drive the new cars in speedway tests.

F. E. Moskovics, president, acted as toastmaster at the banquet which crowned the convention. Col. E. S. Gorrell, vice-president, explained the mechanical refinements and new engineering principles which will be presented in both lines for 1929. Glen Buck, of Chicago, advertising counsel for Stutz, in his discussion of the advertising and merchandising plans for 1929, stressed the importance of beauty in the world market.

Several foreign delegates including Richard Watney, London distributor, and Armeda, dealer in Mexico City, were introduced at the banquet. Bert Dingley, assistant to the president, explained the mechanical features of the cars to the delegates. Other addresses were by E. R. Parker, the sales manager, and E. H. Brisson, Argentine sportsman and race driver.

Fries Resigns From Ajax

E. L. Fries, vice-president, secretary and treasurer of the Ajax Rubber Co., Racine, has resigned, effective Jan. 1., to become associated with a firm of investment brokers in New York specializing in the aircraft field. Ralph A. Beavey, vice-president of the Ajax company, has been elected to succeed Mr. Fries as treasurer, and W. E. Williams has been made assistant treasurer. Charles Collins of Charlotte, N. C., fills Mr. Fries' place on the board of directors.

O'Reilly Joins Peerless

Ralph A. O'Reilly, who for the past nine years has been active in the sales department of Jordan Motor Car Co., has become a special sales representative for Peerless with headquarters at the factory in Cleveland. Mr. O'Reilly was also connected with the Sparks-Withington Co., as sales manager.

Dallas Named Vice-President

C. D. Dallas, president of the Dallas Brass & Copper Co., Chicago, has been elected first vice-president and a member of the board of directors of the Republic Brass Corp. The Dallas Brass & Copper Co. and each constituent unit will continue to operate under its own name a division of Republic Brass.

Nichols Plans Florida Trip

John A. Nichols, Jr., who resigned the presidency of the Falcon Motors Corp. last spring and gave up his holdings in that company, is planning to join the winter colony of motor executives in Florida shortly after Jan. 1.

Hotchkiss Sees Machining Practices Here Changing to Meet More Flexible Design

PARIS, Dec. 29—The open cooperative spirit existing among American manufacturers is one of the greatest assets the industry possesses, states H. M. Ainsworth, managing director of the Hotchkiss company of Paris. Mr. Ainsworth last week returned from a visit to the United States, where he placed orders for machinery to permit a 75 per cent increase in the present Hotchkiss factory. About 60 per cent of the new plant has been ordered in America.

"By working together," said Mr. Ainsworth, "American manufacturers solve their common problems much faster than we do in Europe. A good example of this is to be found in a certain make of aluminum piston, which is now being sold to some of the leading European makers. Individually, we worked on aluminum pistons long before they were used in America, but we kept our experience to ourselves. When American makers tackled the problem they gave the benefit of their experience to the entire industry, with the result that they reached such a stage of perfection that they are now able to export to France and England, the two countries in which aluminum pistons originated. The same applies to machining methods. Some of the methods we used at Coventry, when we produced Morris engines in the Hotchkiss factory, have been taken up, perfected, and generally applied in the United States."

Mr. Ainsworth believed that in future the United States would show greater flexibility in design, in order to meet public taste, and as a consequence machining methods would tend toward simplification. With the possibility of having to change models every two or three years, it would not be economical to lay down some of the elaborate machinery used in the past.

"American cars can be divided into two main classes: those built down to a price and those built from a quality standpoint. It is difficult for us to compete with the former," said Mr. Ainsworth, "but we can hold our own with the others, both on price and quality."

The low price of automobiles compared with other commodities particularly impressed Mr. Ainsworth. "In Europe the automobile is still looked upon as a luxury and taxed as such. There is an immense field awaiting development if only makers would get together to eradicate this pernicious spirit and this adverse taxation which has obtained."

British Manufacturer Here

H. Clayton Wright, director of Desmo, Ltd., Birmingham, England, will arrive in New York Jan. 5 to obtain manufacturing rights on accessories suitable for British sale. He also will seek to sell the American manufacturing rights on the Desmo flexi lubricover. Mr. Wright will be at the Waldorf-Astoria.

Paine Becomes Distributor

Robert G. Paine, for the past two years vice-president of the Commercial Investment Trust Corp., has become vice-president of the Nash New England Co., distributor for Nash cars in the greater portion of New England with headquarters in Boston.

Williams to Leave Moore

George F. Williams, vice-president and sales manager of Moore Drop Forging Co., Springfield, Mass., is retiring from the board of directors of the concern and soon will sever his connection with the company.

Brewer Gets Third Award

Capt. Robert W. A. Brewer has just been awarded the Bessemer Premium by the British Society of Engineers in recognition of his work in the design and development of the air cooled radial engine for aircraft.

Captain Brewer has been engaged upon this work as consulting engineer for 19 years and this is the third occasion upon which he has been awarded the Bessemer Premium for outstanding engineering work.

Tanton Gets Testimonial

Charles H. Tanton has resigned as manager of plant No. 10 of the Fisher Body Corp. after 15 consecutive years of service. At a testimonial dinner tendered him by associates, Norman Tanton, son of the retiring plant manager, presented an onyx desk set to his father on behalf of his coworkers.

Tisne Heads Association

M. H. Tisne, manager of manufacturer accessory sales for A. Schrader's Son, Inc., has been elected president of the Cycle Trades of America, Inc., which comprises in its membership the bicycle and motorcycle industry.

Packard Net Rises in November Quarter

Total of $8,294,607 Compares With $5,533,268—Other Companies Report

DETROIT, Dec. 28—Packard Motor Car Co. reports for the quarter to Nov. 30, 1928, the first quarter of the fiscal year, net profits from all sources of $8,294,607 after depreciation, Federal taxes, etc. This is equivalent to $2.76 per share (par $10) on 3,004,264 shares. It compares with net profits of $4,082,112 or $1.36 per share in the preceding quarter and $5,533,268 or $1.84 per share in the corresponding quarter of the preceding fiscal year.

Packard's December shipments are reported to have reached about 4300 cars against 3859 in the same month a year ago. The full year 1928 shipments are expected to aggregate 50,000 cars against 36,000 in 1927, an increase of about 35 per cent.

Output has been maintained at record levels through the fall months. Dealers' stocks are comparatively low for this time of year. The company has been behind orders until around Dec. 1. Capacity operations through the coming winter will be necessary to supply the present demand and to build up a spring reserve supply, it is reported.

Lakey Foundry Net $1,006,883

DETROIT, Jan. 2—Lakey Foundry Machine Co. reports for the year ended Oct. 31 net profit of $1,006,883, after all charges, equal to $3.52 a share on the capital stock. This compares with $480,182, or $1.67 a share, for the preceding year. Cash holdings and Government securities totaled $309,186 against $57,099 a year ago.

Exide Net Profit $4,741,895

PHILADELPHIA, Dec. 31—Report of the Electric Storage Battery Co. including Willard Storage Battery Co. for the nine months ended Sept. 30, shows net profit of $4,741,895, after expenses and charges but before Federal taxes.

Chandler-Cleveland Shows Loss

CLEVELAND, Dec. 31—Chandler-Cleveland Motors Corp. reports consolidated net loss of $61,569 after all charges, for the 10 months ended Oct. 31.

Dodge Shipments Rise 62%

DETROIT, Dec. 29—Dodge Brothers shipments of passenger cars and trucks from plants in the United States and Canada for November broke all previous records with an increase of 62.6 per cent, compared with last November.

G.M.A.C. Increases Capital

NEW YORK, Dec. 31—General Motors Acceptance Corp. has increased its capital stock to $40,000,000, all of which is owned by General Motors Corp. This increase is made in the form of an issue of an additional 50,000 shares at $125 per share. Surplus and undivided profits bring the corporation's total capital and funds to over $63,000,000 as of Dec. 31, 1928. C. C. Cooper, president of the corporation, states that 1928 was the best year in the corporation's history.

Industry Gets Share of Federal Refund

WASHINGTON, Jan. 2—Hundreds of thousands of dollars in tax refunds have been allotted for payment to automobile manufacturers and dealers in the list transmitted to Congress by the Secretary of Treasury, it was announced recently. The total amount which the Federal government will refund to taxpayers on account of illegally collected taxes is $142,393,567.

Automobile and allied companies sharing in refunds amounting to $25,000 or more include Packard Motor Car Co., $206,420.06; Cadillac Motor Car Co., $52,047.19; Chevrolet Motor Co., $41,327.05; Liberty Starter Co., $111,000; Paige-Detroit Motor Car Co., $26,390.99; Jordan Motor Car Co., Inc., Washington, D. C., $53,126; Mansfield Tire & Rubber Co., $166,636; Peerless Motor Car Co., Cleveland, $33,000; Peerless Truck & Motor Corp., Cleveland, $83,300; Chicago Yellow Cab Co., Inc., Chicago, $295,700; Warner Speedometer Corp., Chicago, $65,877; Velie Motor Corp., $149,571; Howard Automobile Co., Los Angeles, $210,900; Harley-Davidson Motor Co., Milwaukee, $205,279; Stutz Motor Car Co. of Chicago, $32,174; Studebaker Corp. of America, $76,900.

Detroit Copper & Brass Rolling Mills, $44,041; Detroit Steel Products Co., $46,805; Detroit Twist Drill Co., $93,711; Henry B. Joy, Detroit, $28,625; Rich Steel Products Co., Battle Creek, $36,538; William E. Scripps, Detroit, $88,876; W. S. Paterson, "dissolved owner of all assets of W. A. Paterson Co.", $20,277.89.

Kenny Buys Into Giants

NEW YORK, Dec. 31—William F. Kenny, a director of the Chrysler Corp., has purchased a one-fifth interest in the stock of the New York Giants. Mr. Kenny has figured in the sports news frequently as a member of the golf foursomes in which ex-Governor Smith usually played. He is head of a large New York construction company.

Form Patent Insurance Co.

NEW YORK, Dec. 31—The Patent Insurance Co. of Hartford has been granted a certificate of incorporation from the state of Connecticut to operate as an insurer of patents. Its plans call for the insurance of manufacturers, vendors and patent owners against claims for infringement.

Financial Notes

Citroen Automobile Co. will show a net profit, after all financial charges have been paid, of $4,240,000 for the last six months working. By reason of increases in capital and other changes, the financial year closes at the end of six months. The previous balance sheet, which was for a full year's working, showed a net profit of $3,720,000. The gross profit of the company, before financial charges are deducted, amounts to $4,875,560 for six months, compared with $5,119,544 for the previous 12 months. Strengthening the reserve fund by $3,800,000, and bringing it to a total of $11,000,000, the amount to be distributed in dividends is $5,200,000, which will allow 8 per cent being paid on the preferred shares and 7 per cent on the ordinary.

British Goodrich Co., for the year ended Sept. 30, shows profits amounting to £73,235 as compared with £5,856 during the previous year. After deducting a debit balance (£1,206) brought forward, payment of preference dividends (£15,000) and placing £10,897 to preference dividend reserve, the balance is to be used mainly to strengthen the financial position by writing off certain liabilities connected with the formation of the company. The remaining balance of £9,734 is to be carried forward. These results bear out the more optimistic views as to the outlook expressed in the last report, but the present report states that "renewed and intensified competition introduces once again an element of uncertainty."

General Tire & Rubber Co. net profit for the past year was $2,002,000 resulting from net sales of $26,154,000. Net earnings amounted to $18.40 a share with gross earnings, after absorbing an inventory loss of more than $1,000,000, placed at $24.22 a share. An extra cash dividend of 8 per cent was recently announced and regular dividend has been increased from 12 to 16 16 per cent.

Fiat Company common stock appears to be in active demand in the principal stock exchanges of Europe, according to a report from Turin to the Department of Commerce. This stock, with a par value equivalent to $10.82 sold on Oct. 1 at the equivalent to $24.20 and reached the highest point in its history on Nov. 17, at a price of $36.75.

Eaton Axle & Spring Co. of Cleveland directors have placed the common stock on a $3 annual basis against $2 previously, with declaration of a quarterly 75-cent dividend payable Feb. 1 to stockholders of record Jan. 15.

Jordan Stock Subscribed

CLEVELAND, Dec. 31—Jordan Motor Car Co. stockholders have exercised rights to subscribe to more than 95 per cent of the 100,000 additional shares of common stock offered at $11. E. S. Jordan, president, said the company now has $1,500,000 in cash and no current indebtedness. With the recent financing, he said, the balance sheet as of Jan. 1 will show a ratio of current assets to current liabilities of 15 to 1.

New Car Stocks Low as Year Opens

(Continued from page 32)

keep several of the larger factories at capacity for most of January and the filling of orders now on hand will require much of the first-quarter capacity. Reports from leading centers follow:

BOSTON

Dealers are entering the new year with optimism based on the feeling that the present open winter will help in keeping up interest in automobiles; also that the show coming just after the Washington's Birthday open house celebration, and the removal of the barrier of tax-saving by deferred orders until April 1, will stimulate early sales. December was a poor month for sales in new and used cars. Dealers are going into the new year with small stocks of new cars, particularly those with new lines coming through, while used cars are not so heavy.

NEW YORK

New car sales for the end of the year were spotty. Dealers profited by past experience and traded with much more caution than in previous years, with the result that used car stocks are not as excessive as in former years. New car sales during the first two weeks of December were 2855 as compared with 1373 for the same two weeks of last year, according to Sherlock & Arnold.

ATLANTA

December winds up a prosperous year, all classes of cars having shown a gain over 1927, with December volume quite active. The end of the year finds dealers handling lower and medium priced cars with lower stocks on hand than a year ago, and higher priced cars about the same. Used stocks are heavy but approximately the same as last year, though this is mainly due to the fact that dealers have been selling used merchandise at exceptionally low prices.

CINCINNATI

Dealers will go into the new year with new car stocks from 50 to 100 per cent lower than the inventory on hand when they entered 1928. Low priced car dealers have practically no cars on hand and in most cases orders on hand will consume initial shipments. Used car inventories, speaking generally, are much lower than usual though dealers in high-priced cars are complaining of heavy stocks of the higher priced used cars. Sales in December, including the day, showed an increase of 33 1/3 per cent.

DETROIT

While December saw the usual seasonal decline, business was better than the corresponding month of previous years. Continued good weather and prosperity combined to bring about favorable conditions for motor car sales. Many lines of new car stocks were cleaned up preparatory to the introduction of new models. And dealers also waged energetic campaigns to reduce used car stocks.

CHICAGO

Sales of new cars were approximately 20 per cent greater than a year ago and about on an even scale with November of this year. New car stocks in the low priced field are abnormally low. In the medium priced field they are slightly higher, but are not considered unusually so, and in the high priced fields are about on a par with a year go. Used car stocks, on the other hand, have shown an increasing tendency to pile up and are estimated to be slightly higher than should be the case in view of the increased volume of new cars sold.

MILWAUKEE

Passenger car dealers entered the new year in a much more favorable position with respect to new car stocks than a year ago, due to the relatively excellent movement of cars in November as well as December, both months having shown a substantial increase. There has been an excellent movement in the high-priced field and some dealers complain of a shortage of certain models rather than of any oversupply. The outlook for 1929 business is very good, both locally and throughout the state. Industry is in an excellent position, employment in Milwaukee is at the highest peace-time peak in history, and the situation on the farms of Wisconsin is good.

ST. LOUIS

Stocks of new cars are low going into the new year due to the fact that retiring models have been well sold out and many 1929 lines are not yet in stock. Used car stocks are also low through sales and junking. Sales of both new and used machines during December averaged as well as last December. Heavy orders for the new lines have been placed for early 1929 delivery. Total sales of cars in the St. Louis district during 1928 exceeded by approximately 6200 sales during 1927. This record is regarded as very good in view of the absence from the market of Fords during the greater part of the year.

KANSAS CITY

Dealers are closing the most successful December in history. Stocks of new cars are limited, there being more reports of shortages than of being overstocked. Used car stocks are smaller than ever before in December, and dealers are looking with confidence toward the early months of 1929, declaring every indication points to good sales through the winter months.

CLEVELAND

Decided gains in new and used car sales were scored in December. The total for 26 days of the month shows 1960 new car deliveries against 1353 for December, 1927. Credit for the sharp increase is largely attributed to Ford sales, while exact figures for used cars were not available, it was reported that movement was on a correspondingly high scale. Dealers' stocks are a little lower.

DENVER

This December has been the poorest in a number of years, in all lines of cars, new and old, light, medium and heavy. There is some brightening this week, due to Christmas buying, but it does not compare with recent years. Repossessions are somewhat heavier than usual, and used cars increasing, particularly out of the city. In Denver, this situation is kept more in hand, but even here the stocks are heavy.

MINNEAPOLIS

Automobile stocks are practically the same as last year late in December. Used car stocks appear to be some lower than in 1927, but just now this type of car is finding competition in the new low priced cars and do not move as freely. In the new car stocks the lower price machines lead. Dealers are not disposed to take on any more new cars than they had a year ago because the outlook is not enough better than last year to justify it. In fact in some sections the outlook is not quite so good as a year ago from the viewpoint of the automobile dealer.

DALLAS

Automotive business is going into the new year on a sounder basis and with better prospects than at the close of 1927. The total amount of business done in practically all lines during 1928 exceeded that of 1927.

Actual sale of new cars in 1928 was 10 per cent greater than in 1927. Used car sales were about the same. New car stocks at the close of the present year are generally lower. Used car stocks are 5 per cent lighter.

SEATTLE

Retail car sales for December were 5 per cent under sales for November, and about even with sales for December a year ago. Sales for the entire year, however, will be about 15 per cent under sales for 1927. At the present time neither Chevrolet nor Ford has any stocks of new cars, and, on the whole, new car stocks are a little lighter in all classes of cars than was the case a year ago. Car requirements for the next month or two will be slow, with a heavy demand starting in March, in readiness for spring delivery. The used car market has picked up, and business has been very good this month, even better than a year ago. Stocks are average, as compared with a year ago.

SAN FRANCISCO

Sales of automobiles for December show an increase of between 5 and 10 per cent over December, 1927. The situation as to stocks of new cars to be carried into the new year is much better than a year ago. Then almost every dealer had a surplus stock on hand and not a few had an excessive supply to carry over. Now every dealer is in at least as good shape as last year and the majority are in much better position. Quite a number of dealers will enter the new year with their 1928 stock of new cars entirely cleaned up.

LOS ANGELES

December business is considerably ahead of December last year, all classes sharing in increases although the total is slightly under November. Stocks in dealers' hands are reasonably low, except in certain higher-priced lines. Used cars continue to enjoy good market. There is a slight improvement in the truck market.

Commercial Buys Omaha Firm

NEW YORK, Dec. 29—The Commercial Credit Co. has announced through the chairman of the board, A. G. Duncan, the purchase, effective on Jan. 2, 1929, of the entire capital stock of the American Credit Corp., Omaha, Neb. The American company has current receivables outstanding of approximately $3,200,000.

Factory and Dealer Events Scheduled for New York Show Week

Jan. 5	Pierce-Arrow	Luncheon	1.00 P. M.	Plaza
Jan. 5	Studebaker Corp.	Dinner	7.00 P. M.	Commodore
Jan. 5-12	Hupp Motor Car Co.	Luncheons	12.45 P. M.	Commodore
Jan. 5-12	Locomobile Co.	Meetings	2.00 P. M.	Commodore
Jan. 7	Internat'l Luncheon		12.30 P. M.	N.A.C.C. Hdqrs.
Jan. 7	John N. Willys	Luncheon	12.30 P. M.	Biltmore
Jan. 7	Int. Trade Conference		2.00 P. M.	N.A.C.C. Hdqrs.
Jan. 7	Packard Motor Car Co.	Dinner	6.30 P. M.	Roosevelt
Jan. 7	Oakland Motor Co.	Dinner	6.30 P. M.	Penna.
Jan. 7	Rubber Association	Meeting	10.30 P. M.	Commodore
Jan. 7	Rubber Association	Dinner	7.00 P. M.	Commodore
Jan. 7	Amer. Auto. Assoc.	Meeting		Waldorf
Jan. 7	N.A.D.A.	Convention		Commodore
Jan. 7	S. A. E.	Meeting		Commodore
Jan. 7-8	Packard Motor Co.	Meetings		Roosevelt
Jan. 7-8	Robert Bosch Magneto Co.	Luncheon and Meeting		Hotel Astor
Jan. 7-9	Automotive Elec. Assoc.	Luncheon and Meeting		Hotel Astor
Jan. 8	N.A.C.C. Motor Truck Meeting		10.00 A. M.	N.A.C.C.
Jan. 8	Motor & Accessory Manufacturers (Export Group)	Luncheon and Meeting		Hotel Astor
Jan. 8	Graham-Paige	Luncheon	12.30 P. M.	Biltmore
Jan. 8	Natl. Assoc. of Show & Assoc. Mgrs.	Luncheon	1.00 P. M.	Park Central
Jan. 8	De Soto Motor Co.	Luncheon		Commodore
Jan. 8	N.A.C.C.	Dinner		Commodore
Jan. 8	Auburn Auto. Co.	Luncheon	1.00 P. M.	Commodore
Jan. 9	N.A.C.C. Directors' Meeting		10.00 A. M.	N.A.C.C.
Jan. 9	Olds Motor Works	Dinner	7.00 P. M.	Roosevelt
Jan. 9	Jordan Motor Car Co.	Luncheon		Commodore
Jan. 9	Franklin	Luncheon		Commodore
Jan. 9	Motor & Equipment Assoc.	Dinner		Commodore
Jan. 9	Reo Motor Car Co.	Dinner		Hotel Astor
Jan. 9	Chrysler Sales	Luncheon	12.30 P. M.	Commodore
Jan. 9	Warren-Nash Motors	Luncheon	12.30 P. M.	Penna.
Jan. 9	Automotive Elec. Association	Meeting	10.00 A. M.	Hotel Astor
Jan. 9	Peerless Motor	Dinner	6.30 P. M.	Commodore
Jan. 9	Gardner Motor Co.	Luncheon	1.00 P. M.	Belmont
Jan. 10	Marmon Motor Car Co.	Luncheon	12.30 P. M.	Commodore
Jan. 10	Overseas Automotive Club		7.00 P. M.	Astor
Jan. 10	Willys-Overland	Dinner	7.00 P. M.	Commodore
Jan. 10	Buick Motor Car Co.	Luncheon		Commodore
Jan. 10	Durant Motor Co.	Luncheon	12.00 Noon	Roosevelt
Jan. 10	S. A. E.	Dinner	6.00 P. M.	Waldorf
Jan. 11	Chevrolet	Meeting	1.30 P. M.	Mecca Temple
Jan. 11	Chevrolet	Banquet	6.30 P. M.	Mecca Temple
Jan. 12	Safety Conference		9.00 A. M.	N.A.C.C.

Chrysler Controls Terms Under C.C.C. Contract

BALTIMORE, Dec. 31—A. E. Duncan, chairman of the board of Commercial Credit Co., announced today the closing of an exclusive long term contract between the Chrysler Corp. and the Commercial Credit companies for financing retail sales by dealers of Dodge Brothers passenger cars and trucks (formerly Graham Brothers trucks) throughout the United States, Canada and foreign countries.

This new and exclusive contract covering the financing of products of Dodge Brothers, also includes a long term extension of a similar exclusive service covering the products of the Chrysler Corp. which Commercial Credit companies have had for the past several years.

The terms of this new contract provide that the Chrysler corporation shall first approve, have full control over and recommend to their dealers all rates and plans to be offered by Commercial Credit companies before such plans are available to the public.

Timken Bearing to Build

CANTON, OHIO, Dec. 29—Five new industrial buildings, approximating $100,000 in cost, will be started at once by the Timken Roller Bearing Co., adjoining its plant here. A "skull" cracker building to be used in connection with pouring steel; a shipping building extension will cost $30,000; a "hot top" building, used in the steel making process, will cost $25,000; a roll shop will be constructed, and a tube mill building will complete the group.

1929 Hotel Exhibits Increase in Number

G.M. to Show 65 Cars at Astor —Belmont and Montclair Added to List

NEW YORK, Jan. 5—Automobile manufacturers are paying more attention this year to hotel shows run coincidentally with the national show than they have heretofore.

General Motors Corp. has secured all available space in the Hotel Astor. There are about 65 cars in this particular exhibit.

Chrysler Corp. is exhibiting all its lines in both the Commodore and the Pennsylvania hotels. Graham-Paige is exhibiting in both the Biltmore and the Montclair. Packard is exhibiting in the Roosevelt and Marmon in the Commodore and the Belmont.

Other manufacturers exhibiting in the Commodore include Oakland, Stutz, Auburn and Duesenberg, Lancia, Franklin, Moon and the British Austin.

Kentucky Wagon Obtains Contracts for Equipment

LOUISVILLE, KY., Dec. 29 — Although it had been rumored for some months that the large plant in Louisville of the Kentucky Wagon Mfg. Co. was about to be sold to one of the larger motor car interests, for manufacturing and assembly purposes, R. V. Board, president of the company, just back from a trip to Europe, has announced large European contracts involving several millions of dollars and two or three years of steady production. The contracts include a considerable amount of railroad equipment, some bus and truck bodies, trailers for trucks and wagons, according to Mr. Board.

It was stated that considerable additional equipment would be installed.

Muskegon Specialties Gets Chrysler Plymouth Order

DETROIT, Dec. 29—The Muskegon Motor Specialties Co. has received a six months' contract for camshafts from the Chrysler Corp. to be used in the production of Plymouth cars. Shipments will be made at the rate of 750 a day, which makes this one of the largest contracts the company ever has received. According to Fred Flanders, chairman of the board, it will add more than 20 per cent to the volume of the plant's output.

Caterpillar to Show Tractor

PEORIA, ILL., Dec. 28—Four hundred dealers representing the Caterpillar Tractor Co., gathering here Jan. 10 and 11 at the first international convention of dealers in the Peoria plant, will attend the unveiling of the new Model 10, Caterpillar tractor, a 10-hp. farm machine.

Four American Cars Enter Le Mans Race

PARIS, Dec. 29—American participation promises to be strong in the annual 24-hour road race for the Rudge-Whitworth Cup, to be held at Le Mans, on June 15 and 16. The firms having announced their intention of starting are Chrysler, Stutz, Auburn and Hupmobile. There is also a possibility that Buick and Graham-Paige will come to the line.

European competitors will include Mercedes with a 381 cu. in. supercharged model recognized as one of the fastest stock cars in Europe. Bugatti, who specializes in speed models, will enter six cars, three of them being 140 cu. in. supercharged straight-eights capable, in racing trim, of 120 m.p.h. The three others are of a new 16-cylinder job comprising two eight-cylinder engines on a common crankcase, with separate crankshafts united by gearing. Bugatti designed this type of engine for aviation during the war; it has been used for racing by Fiat, but this is its first application to a stock model.

British representation will include a Bentley team of six cars, probably the six-cylinder 342 cu. in. model being used, also teams from Aston Martin, Alvis and Lagonda. It is expected that Italy will send a team of 91½-in. six-cylinder supercharged Alfa Romeos, and French representatives other than Bugatti will be B.N.C., Salmson, Tracta, Sara, Amilcar, Lombard and Licorne.

The race is for stocks cars with full equipment, but various changes in the engine and in gear ratio are allowed. Last year it was won by Bentley, with a Stutz second. Growing in importance every year, it is now recognized as the most important speed contest of its kind in Europe.

Gardner Adds 204 Dealers

CHICAGO, Jan. 3—Gardner Motor Co. has strengthened its sales organization greatly during 1928 by the addition of 204 new dealers, increasing its potential outlets by approximately 20 per cent, according to Russell E. Gardner, president. Important connections have been made recently in the south and southwest territories, including such cities as Memphis, Little Rock and Dallas, where the company was not represented previously.

Coming Feature Issue of Chilton Class Journal Publications

Feb. 23—Statistical Issue Automotive Industries.

Champs Elysees Showroom Opened by Graham-Paige

PARIS, Dec. 29—Graham-Paige opened its showrooms at 44 Avenue des Champs Elysees, Paris, Dec. 13, thus taking its place among other leading American manufacturers on the finest automobile avenue in Europe. This establishment is handled by the Societe des Etablissements A. d'Andiran, Graham-Paige distributors for France, and is the first realization of the progressive program mapped out by Robert C. Graham during his recent visit to Europe.

Sidney H. Diman, European manager for Graham-Paige, who was present at the opening of the showrooms, left the following day for a Christmas vacation in the United States.

Alliance Plants Expand

ALLIANCE, OHIO, Dec. 29—Transue-Williams Steel Forgings Corp. will continue an expansion program in 1929 which was started a few months ago with an expenditure of $400,000. Business at this plant was double that of 1927 and the night force that was put on seven months ago will continue indefinitely into the new year.

The Alliance Aircraft Co., with $180,000 in orders on its books, started this week moving its equipment into its new plant just compleed. As soon as the weather will permit work will be started on a new testing field and airport.

Australian Market Gains

WASHINGTON, Jan. 2—Although the automotive market in Australia is slightly more active and the general tone is somewhat better, the low ratio of profits to turnover is disturbing the trade, the Department of Commerce is advised in dispatches from Sydney. New models are selling well but distributors are complaining of inability to obtain adequate stocks.

Automobile Congress to be Held in Paris

PARIS, Dec. 29—Originally scheduled for the Paris show week and later postponed until this month, no American delegates were able to attend the meeting of the Bureau Permanent International. The countries represented were France, Germany, Belgium, Great Britain, Holland, Italy, and Czecho-Slovakia.

It was decided to hold a world's automobile congress in Paris in the spring of 1930. An agreement was reached on the dates of national automoboile shows in 1929, and the bureau decided to give its support to the standardization program developed by the French association of accessory manufacturers. A report was presented by the propaganda commission, this dealing with the road situation in European countries, French and British colonies, Australia and America. It was decided to complete the information collected and to strengthen the work of the propaganda commission.

Sikorsky Builds Plant

NEW YORK, Dec. 29—Sikorsky Aeronautical Corp. of Long Island City has purchased a 30-acre tract near Bridgeport and is erecting a new plant to which it will move when completed. This tract lies between the municipal airport at Bridgeport and Long Island Sound and the plant when completed will have 125,000 sq. ft. of floor space. It is expected that it will be in full production in June.

Igor Sikorsky and his sales manager, Henry White, sailed yesterday for a six weeks' trip to Europe where they will study the development of multi-motored flying boats in England, France, Germany and Italy.

Fairchild Schedules 1200

NEW YORK, Dec. 29—The Fairchild Airplane Mfg. Corp., subsidiary of Fairchild Aviation Corp., is planning the production of airplanes on a quantity production basis similar to that used in the automobile manufacturing industry. Production schedules for 1929 call for 1200 planes and methods have been improved to the point where little more labor is involved than in the production of the 175 planes built in 1928.

Calendar of Coming Events

SHOWS

All-American Aircraft Show, Detroit Board of Commerce, Detroit..Apr. 6-14
American Road Builders Association, Inc., Cleveland Auditorium..Jan. 14-18
Amsterdam Automobile Show....Jan. 11-20
Automobile Salon, Inc., Hotel Drake, Chicago .....Jan. 26-Feb. 2
Automobile Salon, Inc., Hotel Biltmore, Los Angeles.....Feb. 9-16
Automobile Salon, Inc., Palace Hotel, San Francisco .....Feb. 23-Mar. 2
Boston, Mass., Mechanics Bldg...March 2-9
*Chicago, National, Coliseum, Jan. 26-Feb. 2

* Will have special shop equipment exhibit.

Geneva Automobile Show .....Mar. 15-24
Leipzig, Germany, Fair.....Mar. 3-13
Melbourne Automobile Show.....May 2-11
*New York, National, Grand Central Palace .....Jan. 5-12
Rome Automobile Show.....Jan. 30-Feb. 16
Western States Metal and Machinery Exposition, Los Angeles.....Jan. 14-18

CONVENTIONS

American Road Builders Ass'n, Inc., Cleveland Auditorium.....Jan. 14-18
American Society for Steel Treating, Semi-Annual Meeting, Los Angeles .....Jan. 14-18
Chicago Power Exhibition and Conference, Coliseum, Chicago....Feb. 12-16
Manufacturers & Distributors of Motor Truck Equipment, Cleveland, Ohio .....Jan. 15
National Automobile Dealers Association, Palmer House, Chicago..Jan. 28-29
National Metal Congress, Los Angeles, Jan. 14-18

S. A. E.
National

Detroit, Book-Cadillac, Jan. 15-18—Annual.
New York, Hotel Astor, Jan. 10—Annual Dinner.